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International Cuts News Print Price $5 a Ton

Temporary Reduction, Effective April 1, Makes New Quotation $40 Per Ton Delivered New York—President A. R. Graustein Declares Company's Action Was Made Necessary by General Confidential Reductions on Part of Insolvent Mills—Stresses Necessity of Co-operation Within News Print Industry In Order to Save Itself

The International Paper Company has announced a temporary reduction in the price of news print paper of $5 per ton. The new price at New York will be $40 per ton, delivered. As the International Paper Company is one of the leading manufacturers of news print here and in Canada, producing 600,000 tons annually, it is expected that other news print producers also will reduce prices.

The action of International Paper, it was said, was due to price reductions two months ago by several Canadian producers. At that time news print was offered at $40 a ton here, as against a then prevailing price of $45. At that time quotations of $38 a ton also were being made by representatives of foreign and at least one Canadian mill.

Statement by A. R. Graustein

Publishers of newspapers purchasing news print from the International Paper Company, according to a statement issued by its president, Archibald R. Graustein, were notified as follows:

"On all shipments of news print made under your contract with us during April, 1933, and continuing monthly thereafter until further notice, we will allow a discount of $5 a ton from the price at which we are now invoicing you. In conformity with this you will receive from us early in May a credit note to cover this discount for the month of April. Our price schedule remains unchanged."

This was amplified by Mr. Graustein in the following statement:

"Publishers generally are aware of the difficulties now facing the news print industry. They realize the importance of a stabilization of news print prices at levels that will enable efficient mills, conservatively capitalized, to earn a living and continue to serve the best interests of their customers.

"They know that this is not the situation today; that of the seven largest news print companies, which controlled 70 per cent of the tonnage east of the Rockies, five have stopped paying their bond interest and either have been reorganized or are (in whole or in part) in receivership, bankruptcy or the hands of their bondholders, and that the remaining two, including International, have reported deficits. They know that these signs of distress appeared in large part when news print was at a higher price and the volume of consumption greater than today.

"They know that the news print industry, faced as it is with the possibility of inflation coming and bringing higher costs with it, and faced also with the necessity of financing heavy raw material inventories to insure continuous operation, can ill afford to make concessions at this time.

Cooperation Necessary

"They appreciate these problems of the news print industry and are prepared to cooperate with it to a great extent. It is necessary, however, that the news print industry itself cooperate to save itself. When it fails to do this and widespread concessions in price, open or secret, become oppressive to publishers paying the established price, then these publishers expect from their own sources of supply such adjustments in price as will bring about a fair equilibrium of prices as between competing publishers and as between different sections of the country.

"That is what has happened in the news print market. Open price cuts and secret concessions, even though made for the most part by insolvent mills, have brought about such a situation as forces a further reduction in a price already too low.

"International has recognized these facts reluctantly, and has acted today with the fullest appreciation of the gravity of the situation to the investors whose losses have already been so heavy. The welfare of the industry in the last analysis depends upon the ability of these investors to bring about its stabilization along sound lines."

O. B. Andrews Co. Joins Rice Dealers

ATLANTA, Ga., April 14, 1933—The O. B. Andrews Company, manufacturers of corrugated and solid fiber containers, of 299 Peachtree St., N. E., has recently been made a member of the Rice Leaders of the World Association.

This distinction, which means that the company may use the association's emblem of business leadership, has come to only a few concerns in the section, the announcement said. The company incidentally reported an increase in business last year over 1931 and for the first three months of 1933 also.

Demand for Paper More Conservative In Chicago

Although Trading In Fine Paper Section Has Fallen Off Slightly, Quotations Are Generally Well Maintained—Book Papers and Sulphite Bonds Display Strong Undertone—Kraft Wrapping Paper Division Continues Steady

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 17, 1933—Paper buying in Chicago is on a more conservative basis than last week, according to reports from executives here. A rush of business a week and two weeks ago which aided materially in strengthening prices, tapered off somewhat but the undertone remained more or less satisfactory. Markets, however, remained firm and there are many indications that the rock bottom prices of only a short time ago may be a thing of the past. All this, when proven to consumers by a maintaining of price levels, should aid buying considerably.

The kraft market and the sulphite bond market, among others, showed further strengthening this week, according to reports. Buying slacked somewhat in the fine paper groups but the firmer tone prevailed. There are reports of continued betterment and encouraging cooperation in the book paper market. The cover paper market, as well, seemed to be more firm. Ground woods reported no actual advance in market but some genuine improvement in tonnage, which shows encouraging increase in demand for this product. News print is slowly feeling the effects of more voluminous advertising appropriations and there are hints of optimism surrounding prospects for the near future. Board continued to hold comparatively strong. Waste papers remained about the same.

Paper wholesalers are still much puzzled over the new state sales tax and informal meetings usually culminate in a free-for-all interchange of opinion as to the taxability of the products. All this is due to the lack of specific regulations from Springfield, where a restraining injunction is causing the Department administering the tax to be cautious about publishing any regulations other than those which are already available and are considerably cloudy in terminology.

Paper Container Groups to Meet

The next meeting of the Container Division of the Paperboard Industries Association will be held in the West, probably in Chicago, in the latter part of May, according to word from the Chicago headquarters of the association. The association also reports that the session will be the first with the group operating under two separate organizations—the independent division and the open division.

The independent division will include independent container manufacturers and independent mills, the division being created to provide a forum for the discussion of problems of particular interest to the independent container manufacturers and mills. The open division is the same as the original Container Group in which membership and participation is open to all manufacturers of corrugated or solid fiber containers.

The Independent division has elected M. M. Madson, C. F. Downey Box Company, as president; and R. H. Dollison, Fairmont Box Company, and H. D. Schmidt, Schmidt & Ault Paper Company, as members of the executive committee.

G. R. Browder, president of the Paperboard Industries Association, was elected head of the Open division. J. M. Arndt, Robert Gaylord, Inc.; W. M. Dixon, Container Corporation of America; and J. B. Fenton, Hinde & Dauch Paper Company, were elected to represent the open division on the executive committee.

The two divisions will hold an unusually important meeting in Chicago inasmuch as problems confronting the industry need wholehearted cooperative effort in arriving at procedures of value to individual concerns and to the entire industry itself.

Paper Salesmen's Golf Program

From out of the most recent meeting of the Middle West Division of the Salesmen's Association of the Paper Industry comes the schedule for the forthcoming golf season that is possibly the best yet offered to this group that loves its golf and good fellowship. Bill Tilden, Eastern Manufacturing Company, is chairman of the golf committee. He has announced the summer schedule with a punchful letter written on a specially prepared letter head featuring a cartoon of three golfers shouting "Hey! Ask Your Wife If You Can Come Out and Play."

The schedule is as follows: May 19, Bob-O-Link Country Club; June 23, Sunset Ridge; July 21, North Shore (where the National Open is to be held); August 18, Knollwood; September 15, Westmoreland and, for Olympia Fields a big final windup with guests at the National Paper Trade Association convention present.

The date for the final event will coincide with the dates for the National Paper Trade Association meeting. Not only will the salesmen be bulletined each month concerning each event but Chairman Tilden is providing them with a small card schedule, so that they can plan their holidays, visits, business trips, etc., accordingly. Each of the above clubs are of the "exclusive" variety; each well kept up and sporty to the nth degree. Bill Tilden is in for congratulations!

Further news from the Monday, April 10 session of the salesmen is to the effect that President Harold Knott not only went off the wagon and into the beer trough individually but was kind enough to "set 'em up" to all those present at the meeting. Mr. Knott says that such a procedure will not be repeated at each forthcoming session of the Association.

Work of the Paper Foundation

Phil Howard, president of the Paper Foundation, Inc., has been in New York and Philadelphia the greater part of the week continuing his efforts to conclude the sale of space in the Paper Exhibit and individual exhibit space at the Century of Progress Exposition. Meanwhile his editorial in the first edition of "Paper's Progress," a newsy four-page bulletin devoted to the Foundation work, is attracting widespread and favorable attention. Here is a part of the editorial that the Foundation executive board hopes everyone will read: "Our plans call for a comprehensive educational Paper Exhibit-Paper Machine, 'House of Paper', and a magnificent individual exhibit of mills' and convertors' products. We are building an exhibit for the industry to see and awaken to its greatness. We are building that the present and future generation (representing the buyers of tomorrow) may see Paper in all its glory—Paper as representing the seventh greatest industry of the country at this Century of Progress of all the great industries . . . Our

great Paper Exhibit will have a direct bearing on the future stability of our industry and I call upon the rank and file of the great army of leaders in its ranks to put their shoulders to this worthy undertaking and so enable us to finish our work, help us to help you." "Paper's Progress" is to be published every week. In it reports of subscribers for display space will be featured; the progress of "Paper Day" will be reported and various facts concerning paper's side of the Century of Progress set forth in full detail.

Paper Merchants Discuss Sales Tax

The Chicago Paper Association held its regular meeting on April 11, under the presiding influence of M. A. McNulty, vice president of the industrial division. Two members, Leo S. Altholz and D. F. Peck, outlined their opinion of the provisions of the State sales tax. It seemed to be the consensus of opinion that members would continue to collect the three per cent tax; refunding if and when the present injunction is sustained or when rulings from the State Department of Finance show them not liable for payment of the tax.

News of the Trade

The paper industry was fairly well represented at the Eleventh Annual Midwest Safety Conference which was held at the Stevens Hotel on April 12 and 13. The Fire Prevention session on the morning of April 12 and the handling materials session on April 13 both provided programs of interest to paper manufacturers. "Maintaining Interest in Safety Sessions", the theme of the final meeting, was of particular interest to those manufacturers who are endeavoring to carry on a year 'round safety program that will compel and retain the attention of employees themselves.

The Howard Paper Company, through its Chicago distributors, has a recent direct mail piece out under the interesting, and well illustrated, title of "After Your Dictation Is Finished—Then What?" The copy then deals with the effectiveness and productiveness of high grade paper and mentions these qualities as contained in Howard Watermarked Bond.

Trimbey Machine Works Busy

GLENS FALLS, N. Y., April 17, 1933—Improved business conditions are reported from the Trimbey Machine Works which has contracts to be filled that will require steady operations for some time. Orders filled this week included a shipment of several pulp screens to the National Paper Products Company, Port Townsend, Wash., and another is now under construction for the Mead Corporation, Kingsford, Tenn. Shipments to foreign countries so far this month comprised a number of metering systems for paper machines which were sent to Hunsfos, Norway.

It is understood that three-fourths of the machines sold by the company in 1932 went to foreign countries but this year efforts are under way to obtain a larger volume of business in this country. A prominent official recently returned from a trip through the Ohio Valley which was productive of good results and the outlook is considered excellent. Orders already booked insure full time schedules for several weeks and the business so far is said to compare favorably with other years.

A. L. Nielson Goes to Salisbury Mills

SALISBURY MILLS, N. Y., April 17, 1933—Anton L. Nielsen, former superintendent of the Mohawk Valley Paper Mills, Little Falls, has been engaged as superintendent of the Frost-White Paper Mills, Inc. here.

International Paper Reports Loss

An increase in cash and a decrease in notes payable are shown in the statement of the International Paper and Power Company and subsidiaries for the year ended on Dec. 31, last. Cash increased from $7,634,264 to $9,487,058. There was a consolidated net loss of $8,757,728 after depreciation, interest, amortization, taxes, subsidiary preferred dividends, minority interest and other charges. This contrasted with a net profit in 1931 of $618,239, equivalent to 67 cents a share on 919,919 shares of 7 per cent preferred stock.

The company, which operates extensively in Canada as well as in this country, reported that all figures were taken at parity of exchange, or without adjustments of differences between foreign and United States funds. Any profit or loss on exchanges at the time funds were actually transferred was taken into current operations.

The balance sheet shows total current assets, including cash, were $60,513,505 and current liabilities were $40,574,674, leaving a net working capital of $19,938,931. A year earlier current assets were $73,916,616 and current liabilities $51,030,357, with net working capital $22,886,304. The most important change in these accounts was that notes payable were reduced from $36,321,780 to $27,984,247.

Total assets declined during the year from $898,538,082 to $887,283,254; plant account increased from $730,339,849 to $731,724,907; funded debt rose from $357,767,794 to $360,940,226, of which $2,227,806 will mature in 1933, and depreciation reserve increased at about the normal rate, from $93,873,967 to $99,359,509.

The income account shows gross sales for the year of $129,531,271, against $147,695,229 in the preceding year. Gross income was $35,869,193, against $40,219,837. Surplus declined from $11,961,887 to $3,204,158.

Boston Paper Trade Happenings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 17, 1933.—Brewster Bond, a paper named after an island in Boston Harbor, is a line which Knight, Allen & Clark, Inc., is carrying in liberal amounts of stock. This bond is an attractive paper, in white only.

Another attractive paper is Hancock Bond, a new private line, put out by John Carter & Co., Inc. This is in white only and strong in texture. Envelopes are made to match.

A sales meeting was held at the office of Carter, Rice & Co., Corp., Saturday morning at which men of the Brown Company were guests. The discussion was on krafts and other products of this manufacture. Sales Manager Pray, in charge of the New York office, and Assistant General Sales Manager Shaw, gave talks. Eugene Hanson, in charge of the Boston office, described the uses of Solka pulp. Frank Winter, sales manager of Carter, Rice & Co., Corp., presided.

Arthur W. Blackman, president of D. F. Munroe & Co., and Miss Sue Kirk, of Owensboro, Ky., were married April 4 at Owensboro.

The International Paper Company was among the cooperating exhibitors at the Home and Garden Exposition in the Boston Herald-Traveler Building last week. The International showed Gator-Hide Mulch, a protective paper which keeps the ground warm.

Some changes are being made in one of the 80-inch machines at the Haverhill, Mass., plant of the Robert Gair Company.

Price Bros. & Co., Ltd., Declared in Bankruptcy

Action by Registrar of Quebec Bankruptcy Court Follows Consideration of Petition Filed by Duke-Price Power Co.—Gordon Scott, Recently Appointed Guardian, Authorized to Carry On Affairs of Company—Creditors Meeting Set for April 27

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 17, 1933—The firm of Price Brothers & Co., Ltd., news print manufacturers, has been officially declared in bankruptcy by Wilfrid Edge, K.C., registrar of the Quebec Bankruptcy Court, following consideration of a petition filed by the Duke-Price Power Company. The Hon. Gordon Scott was recently appointed guardian, and a meeting of the creditors has been set for April 27. Mr. Scott will continue to carry on the affairs of the company, having been authorized by the registrar to secure a loan of $250,000 for that purpose.

The Duke-Price Power Company, which is vitally interested in Price Brothers because the latter's mills provide one of the chief sources of the power company's output, is said to have been working for some time past on a plan which would permit Price Brothers to continue operations. Several other plans are also said to be under way, but it is understood that none of them has yet been submitted to the Bondholders' Committee. The committee has issued a letter to the bondholders which says in part:

"To holders of Price Bro. & Co., Ltd., first mortgage 20-year sinking fund gold bonds, Series "A" 6 per cent, due 1943, who have not deposited their bonds:

"Bankruptcy proceedings were brought against Price Bro. & Co., Ltd., by the Duke-Price Power Company as an unsecured creditor on account of the company's failure to pay current and past-due power bills. The Hon. Gordon W. Scott was appointed interim receiver on Friday, March 31, 1933. On Monday the committee had conferences with the bank creditors and with Mr. Scott, looking to continued operations of the property pending the adoption of a reorganization plan.

"The response to the committee's requests for deposit of bonds has evidenced the confidence in the committee of the holders of a large majority of the bonds. Over 63 per cent of the bonds have been deposited, which includes the bonds held by several insurance companies and other large institutions located both in Canada and in the United States. It is apparent to the bondholders' committee that the undeposited bonds are for the most part held in small blocks (average holdings about $4,000 of bonds per holder), and the committee desires again to urge upon the holders of the undeposited bonds the importance of depositing their bonds promptly.

"The situation of the company is now crystallizing rapidly, and it is important that further bonds be deposited with the committee at once, since to take certain action which the committee may find necessary to protect the interest of the bondholders would require the vote of a greater percentage of the bonds than the committee can now speak for.

"May we have your co-operation and deposit of bonds immediately?

"Please give this matter your prompt attention."

Bathurst Power & Paper Reports

The report of the Bathurst Power and Paper Company, just issued, shows that for the year ending December 31 last, there was a loss from operations of $158,224, after deducting all operating, selling and management expenses and after making provision for depletion of timber limits at the rate of $1 per cord on wood cut. This compares with an operating loss of $86,460 in 1931 and an operating profit of $132,953 in 1930. A constructive feature of the report is the maintenance of an unusually strong balance sheet position, with the ratio of current assets to current liabilities shown in excess of 22 to one.

The president, Brigadier-General J. B. White, in his remarks to shareholders, says in part:

"The operations for the year after deducting all charges and after making provision for depletion of timber limits at the rate of $1 per cord on wood cut, but without any provision for depreciation, resulted in a loss of $131,613.

"Reference was made in last year's annual report to the introduction of kraft liner board. The demand for this product has enabled the company to increase its total volume of business, and aggregate sales were in excess of the preceding year by over 4,000 tons. The manufacture of kraft liner board, although not productive of profit, assisted the company very materially in reducing its inventory of wood.

"Conditions in the news print industry were most unsatisfactory, and, while sales were only slightly less than in the preceding year, the price realized was substantially lower.

"The satisfactory financial condition of the company has been maintained. Cash and marketable securities at the end of 1932 amounted to $867,033 (at quoted values), as compared with $654,226 at the end of 1931 and the ratio of current assets to current liabilities exceeded 22 to 1. The company has no funded indebtedness or bank loans.

"Continued attention is being given to reduction of expenses and substantial economies have already been effected."

Boston Paper Market Fairly Active

BOSTON, Mass., April 17, 1933.—As a whole the market for paper among Boston wholesalers has been fair during the week under review, but there is great room for improvement. The wrapping paper division enjoyed considerable business on account of demand from the stores to meet their Easter needs. During the week large crowds of shoppers were in evidence. The fine paper division in some houses had a good business. The advent of the new beer brought many calls for paper for labels for bottles. Some firms are putting out new lines.

The box board market was less active in some lines and more active in others. The jig saw puzzle interest is waning, although it is felt that this diversion will be revived again in the Fall. On the other hand the call for material for covering beer bottles and for beer mat boards continues.

Paper stock continues in about the same position as a week ago, as a whole. One firm is interested in comic supplements for export. They are sold, not as waste paper, but to individuals, who buy them to read at around a cent a copy or two for a cent. Mixed papers and old newspapers are firm and very active, as well as roofing rags. Heavy foreign gunny bagging is quoted at .80 and light foreign burlap at .85.

Activities of Fox River Valley Paper Mills

Federal Census Bureau Releases Paper and Pulp Manufacturing Statistics for 1931—Kimberly-Clark Corp. Reports Profit of $150,206 for First Quarter of 1933 — Construction of New Cedars Dam Across Fox River to Start Shortly

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 17, 1933—Figures of the manufacturing census just issued by the federal census bureau for the year 1931 indicated that there were forty-five paper mills employing 8,595 wage earners, paid $9,748,544 in wages, used $42,159,906 worth of materials, and produced $70,182,440 worth of paper.

Nineteen plants making other paper goods had 1,133 wage earners, paid $1,171,282 in wages and used $6,943,783 worth of materials. Total value of products they manufactured was $10,701,148.

Pulp mills numbering 28 in the state employed 2,807 wage earners, paid $3,269,280 in wages, bought $16,827,583 worth of materials, and produced $25,127,337 worth.

A general summary of all industries showed a decline of manufacturing establishments from 6,431 in 1929 to 6,335 in 1931. The number of wage earners dropped from 264,745 to 183,906; wages paid from $352,490,893 to $189,099,478. The cost of materials, containers, fuel and purchased electric energy dropped from $1,206,840,087 to $669,434,141. Value of products manufactured declined from $2,156,681,769 to $1,199,531,574.

Employment Percentage Higher

Current figures compiled by the Wisconsin Industrial Commission showed an increase of three per cent in the number of employees on payrolls in February of this year as compared to January. Aggregate weekly pay rolls increased 5 per cent. Appleton, Neenah, Menasha and Green Bay, largely devoted to paper manufacture, were among the cities showing increases.

Kimberly-Clark Corp.'s Earnings

The first quarter of 1933 produced net profits of $150,206 for the Kimberly-Clark Corporation, Neenah, Wis., after all charges but before preferred dividends, according to the company's financial statement. The net for the corresponding quarter in 1932 was $244,750. Preferred dividends for the first quarter required $149,445, leaving a balance applicable to common stock of $761. The common stock balance in 1932 was $95,305, or 19 cents a share.

New Dam for Fox River

Construction of the new "Cedars" dam across the Fox River at Kimberly, Wis., where one of the largest mills of the Kimberly-Clark Corporation is located, will be started about May 1. The United States engineer's office has awarded the contract to Lemke Construction Company, Kaukauna, Wis. The dam will cost about $60,000 and will be of concrete and steel construction. About thirty men will be employed, and the work is expected to take about four months.

Reduced Coal Freight Rate Asked

In order to meet the competition of barge and truck lines supplying coal to paper mills and other users in cities of the lower Fox River Valley, four railroads have petitioned the Wisconsin Public Service Commission for permission to reduce the rate per ton on coal to 75 cents from Green Bay to Appleton, Neenah and Menasha. The present rate is 85 cents to Appleton, and 94 cents to Neenah and Menasha. Last year between 300,000 and 350,000 tons of coal were moved by barge, and the railroads desire to recapture some of this business. Roads signing the petition are the Chicago and Northwestern, the Soo Line, the Chicago, St. Paul and Pacific, and the Green Bay and Western.

Forest Fire Prevention

Reminded that April last year was the worst month for forest fires, state conservation officials are placing their fire fighting organization and equipment in shape for a possible recurrence of that situation. The commission reported more fires last season than in the previous year, but the amount of acreage burned per fire and the loss of timber was much less. Facilities have been increased greatly since then, and much road building and fire lane cutting has been accomplished through the state and federal unemployment programs. Quick detection and prompt arrival of fire squads is expected to cut down the waste in lumber and pulpwood areas much further.

Suits Against Kimberly-Clark Officials Dismissed

Frank J. Sensenbrenner, president of the Kimberly-Clark Corporation, J. C. Kimberly, of Neenah, Wis., and J. A. Auchter, of Milwaukee, Wis., as defendants in suit for $214,500 involving sales of stock of the corporation emerged the victors as the result of a decision of the Wisconsin Supreme Court.

The decision of Judge Fred Beglinger, of the circuit court at Oshkosh, Wis., where the action originally was brought, sustained the demurrer of the defendants and was approved by the supreme court. The suits therefore are dismissed.

Action was brought by Mrs. Christina W. Thom and Mrs. Helen Thom Roemer, widow and daughter, respectively, of the late Peter W. Thom, one time superintendent of the Kimberly-Clark Corporation. They contended they had been induced to sell their stock at a figure below its true value, based on the company's earnings and brought suit to recover the difference.

Whale Joins Nekoosa-Edwards

R. G. Whale of Detroit has joined the Fine Paper Division of the Nekoosa-Edwards Paper Company with headquarters at the mill office in Port Edwards, Wis. He will assist in the developing of their fine papers and in promoting sales and advertising.

The career of Mr. Whale is one of rapid rise to prominence and success. Only thirteen years ago he started in the paper industry with the Fox River Paper Company at Appleton, Wis.

Three years later Mr. Whale joined the Butler Paper Corporation as a buyer in the Chicago office.

In another three years he was moved to the Butler Paper Corporation of Detroit, in a sales executive capacity. During 1929 Mr. Whale was advanced to secretary in charge of sales promotional work and retained this position until his resignation was accepted March 1.

Mr. Whale's recognized knowledge of fine papers, his broad acquaintance and popularity in the industry and his executive ability naturally pointed to his selection for this important position with the Nekoosa-Edwards Paper Company.

Demand for Paper Irregular in Philadelphia

Fine Paper Market Only Moderately Active—Purchasing of Coarse Paper and Paper Bags Much Stimulated—Slightly Advanced Quotations Generally Well Maintained — Paper Cups In Better Request—Paper Stock Section Virtually at Standstill

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 17, 1933—Conditions in the paper trade as a whole during the past week were remarkable for their contradictory character, both as to business itself and as to the manner of its doing. If, in the rounds of the trade for information, one went no farther than among the coarse paper houses, encouraging, even glowing, reports of improvement might be made with every justification of truth. If, on the other hand, the quest was only among the fine paper houses, no report of any marked improvement could be made, and indeed attention frankly would have to be directed to the failure of a confidently expected improvement to manifest itself. And likewise among the packers of stock there was also a slight tinge of disappointment, although by and large, conditions in this branch of the industry remained virtually at a standstill.

Some Changes in Trade Customs

Moreover, this Eastertide week brought out some rather curious changes in the trade customs. For as many years back as the memory of many of the oldest in the trade run not to the contrary, Good Friday was always a day of activity in the printing trade, but Easter Monday was the one day of the year when every printer celebrated. On the other hand, paper distributors virtually paid no attention to Easter Monday but nearly all recognized Good Friday. This year, conditions were in rather marked contrast. Many of the printers were closed partly or all day on Friday, and quite a few of them were operating, if not busily, today. Among the paper distributors, Good Friday generally was observed by a half holiday or a full holiday, and Easter Monday was also recognized by an early closing hour and partial afternoon holiday to a great extent throughout the trade.

The fine paper houses report very slight activity among their printer consumers. Some of them had business increase by printing incident to the legalized beer developments and some others from the continued jig saw puzzle, but the end of both is seemingly in sight. Houses equipped to do puzzle picture work with steel dies enjoyed a real harvest, but some of the printers who went into the craze and used brass rules are reported to have required the services of machinery repair men to a considerable extent.

The coarse paper and bag trade reports very much stimulated buying during the past week, and most noticeably and most welcomed the virtual cessation of cutthroat competition. Because of stabilized and slightly advanced prices to which the distributors generally are adhering, more buying and in larger quantities than for sometime past was enjoyed. A particular increase was noted in demand for paper cups.

News of the Trade

The meeting of the Philadelphia Paper Trade Association, scheduled for Wednesday of last week, was postponed by President William A. Hentz because of his attendance in New York at the conferences of the mill men, and because previously of the bereavement he suffered through the death of his stepfather, Robert H. Ingersoll, Vice Chancellor of New Jersey, who died at his home in Atlantic City. Mr. Hentz said today that he believed large amounts of good would accrue not only directly to the paper distributors but quite as much to their consumers as a result of what he characterized as very satisfactory and encouraging exchanges of viewpoints with the mill men at the New York conferences. President Hentz added that it was his desire to have an early meeting of the association, and probably would send out a call for Wednesday of next week, but was not ready to make a definite announcement.

There was filed during the week an inventory of the estate of Thos. R. Fort, Jr., owner of the Thomas W. Price Paper Company, once a member of Select Council, and for many years prominent in the affairs of the Methodist Episcopal Church, who died in November last, at his summer home in Ocean City, N. J., as announced in these columns. The inventory places the value of the estate at $713,346; it fixes the net worth of the Thos. W. Price Paper Company, which Mr. Fort owned, at $273,914. Other assets listed are $258,000 worth of City of Philadelphia coupon bonds; $25,000 of School District of Philadelphia bonds; $107,690 in securities, held by the Central-Penn National Bank as collateral for a loan; 1100 shares of Central-Penn National Bank, valued at $30,800; 500 shares of Hammermill Paper Company $37,000, and 1500 shares of the United Gas Improvement Company $27,937.

The Pennsylvania-New Jersey Division of the American Pulp and Paper Mill Superintendents Association and the Delaware Valley Section of the Technical Association of the Pulp and Paper Industry will hold a joint meeting in the Benjamin Franklin Hotel, April 22. Among the speakers will be H. T. Sorensen, of the Beck Engraving Company, who will speak on "Paper as Viewed by the Engraver." Other subjects will include "Recent Developments in Size," "Optical Characteristics of Paper," "Rubber Rolls—their use and purpose," and "Troubles of the Ink Maker with Paper."

The Paper and Bag Institute of Philadelphia meets on Wednesday of this week in the office of its Credit Bureau, 2005 North American Building, to decide finally on the long considered first annual banquet.

President O'Neill, of the Paper Manufacturers Company, Inc., reported exceptionally good demand for its line of gummed papers, and announced that it will in a short time send out a folder containing a complete line of samples.

Abe B. Kehr, sales manager of the Paramount Paper Products Company, 226-28-30 Callowhill street, announced the opening of an office in the Salmon Tower Building, West 42nd street, New York, with Kenneth Humphries in charge. Mr. Humphries is a recent addition to the Paramount organization. It has just developed a new visual bag with an improved window front opening composed of various types of paper with cellulose, and said to be a marked improvement over other types of window front bags, being reinforced at bottom and top, and so made that the cellulose cannot crack and spill out the contents.

New York Trade Jottings

Morris Machine Works, manufacturers of centrifugal pumps for the paper industry, annonuces the removal of its New York office to 254 West 31st street.

* * *

Walker, Goulard, Plehn Company, Inc., general paper merchants, of 45 Pearl street, New York, have been elected to membership in the New York Employing Printers Association.

* * *

By order of the U. S. District Court, Southern District, New York, Michael Tauber & Co., auctioneers, will sell at public auction, April 24, at 10:30 a.m., at 363 East Ohio street, Chicago, Ill., the assets of the American Bread Wrapper Company, Inc., including machinery, fixtures, supplies, etc. Inspection on premises. The Irving Trust Company, of 233 Broadway, New York, is the trustee.

* * *

H. H. Heinrich, Inc., New York, who handle the sales of Matador Bag Machines, Aniline Printing Presses, rubber plate equipment, and other similar lines, have further expanded their territory by appointing a west coast representative—the Harry W. Brintmarr Company, of San Francisco. The Heinrich representative in Chicago is Arthur Prausnitz, 122 South Michigan Avenue.

* * *

Robert Schmidt, of the Miller & Wright Paper Company, has been elected president of the Paper Association of New York City. Other officers elected are: David S. Landau, of the Alling & Cory Company, vice-president of the Fine Paper Division; and Elwin Walker, of the Walker, Goulard, Plehn Company, vice-president of the Wrapping Paper Division. Herbert B. Thurston, of Conrow Bros., has been re-elected treasurer and Irwin Slote, secretary.

* * *

George Oliphant, president of Castle & Overton, Inc., was the guest speaker at the regular weekly meeting and luncheon of the Eastern Division of the Salesmen's Association of the Paper Industry, held at the Hotel Roosevelt, New York, on Monday last. The subject of Mr. Oliphant's address was "The Use of Imported Pulp in the Manufacture of High Grade Paper." The subject was discussed by the speaker in a very interesting and instructive manner and his talk was thoroughly enjoyed and appreciated by all present.

T. M. Avery Gets Bag Patents

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., April 17, 1933—Two patents for inventions of a transparent covered tray and a moisture proof covered bag have been granted to T. M. Avery, of this village, by the government. Several claims of new ideas relative to the inventions were also allowed and patent rights have been assigned to the Union Bag and Paper Corporation. Applications for the patents was filed in 1931. The inventor has been prominently identified with the paper industry for many years as an official of the Union Bag & Paper Co.

Parker & Son Open Chicago Office

Joseph Parker & Son Company of New Haven, Conn., America's oldest blotting paper manufacturers announce the opening of a Chicago Office at 77 West Washington street.

George B. Tapner, who has been associated with the Rochester Paper Company, is in charge of this new office.

The Dilts New Type Refiner

A new refiner will soon be offered to the paper manufacturers, and it is said to be a machine that possesses unusual merit.

In a preliminary announcement of the new machine, the manufacturers say:—

"It has long been the custom in paper mills to 'finish' the paper in jordans or some similar type of refining machine. This has been expensive in power bills and in the cost of refilling, etc. Recently there have been many attempts to produce a machine with which to replace this unsatisfactory equipment, but apparently these efforts have not met with great success and it is not until this new refiner arrived upon the scene that the paper makers were seriously interested.

"Now we are able to announce this new type refiner which will soon be brought to the attention of the mills in due and ancient form.

"This interesting announcement refers to the Dilts New Type Refiner, a high speed machine operating under high pressure and having very large capacity. It has been in use several months on different classes of stock and in several different mills, and the reports are very gratifying.

"In one large board mill where the Dilts refiner is being used, it produces eighty (80) tons of mixed paper stock with 150 hp. This shows a saving of 2,000 KW per 24 hours and the quality of stock produced is highly satisfactory. On finer grades of sulphite stock in other mills it is equally satisfactory, the reports being that the machine possesses many special features which are very valuable indeed.

"Mechanically the Dilts New Type Refiner is all that can be desired. The shell casing is chambered for water cooling, and the shell is made split which affords easy access to the wearing parts. Both the shell and plug liners are easily removable and are made from special alloy steel to insure long wear.

"The Dilts Machine Corporation, although building hundreds of beating engines over a period of nearly seventy years, has never before built refiners. But appreciating that the item of power costs in the paper mills is a serious matter today, they have yielded to the pressure put upon them and have designed and will build this New Type Refiner from which the evils of high power, expensive refilling, limited capacity, delicate adjustment, etc. are eliminated."

The Dilts New Type Refiner will be certain to command a high degree of interest on the part of the paper makers who today are facing the most serious conditions in their business that they have ever encountered.

Albany Gets More Pulp Shipments

ALBANY, N. Y., April 17, 1933—Several more shipments of pulp wood from Sweden have arrived here and a busy spring season is in prospect for the local port terminal. A vessel named the Etna reached here carrying 1,600 tons of the imported product and this cargo has already been unloaded and sent to mills in Northern New York. During the week the Swedish vessel Heddernheim also docked here with several thousand tons of pulp wood after a journey which was somewhat stormy. The vessel was forced to return to Germany for repairs after leaving Europe early in January.

Plans for enlarging the facilities at the local port are progressing and it is expected that the improvements will relieve the congestion resulting from the huge piles of pulp wood stored here. Storage space has been at a premium for some time which resulted in the decision to extend the facilities.

COST DEPARTMENT

Edited by Thomas J. Burke C. A.

Accounting for Wood-Pulp Paper Industry*

By C. H. Aveyard

The history of paper making takes us back beyond the Christian era. The Chinese are credited with the manufacture of paper from vegetable fibres more than 100 years B. C. The ancient Egyptians made paper from papyrus —a tall reed found on the banks of the Nile. European paper making dates from the 11th century.

For many years cotton and linen rags formed the principal raw material of the paper making industry. It was not until about 1870 that wood pulp came into favor. Today it is estimated that approximately 95 per cent of all paper manufactured in this country is made from wood pulp.

In the preparation of this description of the present industry I am indebted to the PAPER TRADE JOURNAL for the many articles on cost accounting that have appeared therein from time to time and also to a treatise issued by the Cost Association of the Paper Industry entitled "A Budget Cost System for Paper Mills." The information obtained therefrom is gratefully acknowledged.

Organization

In the manufacture of paper, as in all industries, there is no greater source of economy than the conservation of human energy through the application of sound principles of efficient organization of action of the men and groups of men whose duty it is to carry out the objects of a paper making business. It also comprises the uniting of these men to cooperate for the general good, harmoniously, promptly, efficiently, and economically. The following chart illustrates a type of organization suitable for a paper manufacturing business.

President or General Manager

Treasurer or Comptroller	Works Manager	Sales Manager	Personnel Manager
Budgetary control	Technical Research	Sales Research	Employment
Accounts	Plant Equipment & processes	Sales Promotion	Transfers
Statistics	Preparing instructions	Advertising	Promotion
Cost Accounts	Traffic	Warehousing	Training courses
Payrolls	Production control	Training Salesmen	Health
Credits & Collections	Stores	Directing sales force.	Safety
Office Management	Cost data & service		Recreation
Legal including Trade-marks	Planning.		Wages
	Routing		Profit sharing
	Preparing		
	Inspection		
	Superintendence & Supervision		
	System		
	Purchasing		

The heads of the four columns comprise the executive committee and only these four men report to the general manager. They are responsible for the carrying out of the activities listed in their respective columns.

Factory and Warehouse Facilities

In choosing a location for a paper mill the necessity for having a large supply of water at command must be considered. Not only is a large quantity necessary but it should be free from impurities. In all stages of manufacture of paper the consumption of water is relatively large and the quantity of water used in steam raising is considerable.

Other factors in determining locality include the question of freight on raw and manufactured materials, the cost of coal and the supply of labor.

As to the layout of the plant itself, it is suggested that an arrangement under which all the machinery is on the same floor is about as good as any. The beaters should be in a room by themselves. In the next and largest room of the mill should be the paper machines. Beyond the machine room should be the finishing room in which are situated the cutting machines and hydraulic packing presses, etc. In an annex, close to the beaters, dissolving vats for chemicals, lime and caustic soda, and mixing vats for bleach and clay should be installed. If machinery is used for converting rags into pulp this should be in a separate room, preferably the first room before the beater room. As far as possible the attempt should be to have the manufacture proceed in a straight line through the factory, raw materials entering at one end and the finished product emerging at the other.

There should be a central power station to develop electrical energy with maximum economy. This should contain equipment sufficient to provide electric power for the operation of the entire plant. The power consumption of each unit should be measured so that costs can be more easily calculated.

The stores should be in close proximity to the factory and it is usually advantageous to have sub-stores at convenient parts of the factory so that the workmen do not have to waste unnecessary time. The pulp and other ingredients should be stored as near to the beaters as possible. Usually a supply of beaten pulp sufficient to keep the paper machine operating for 24 hours, or more, is stored in the stock chests; in the event of delay in the beaters, the paper machine can then continue operations.

* From Journal of Accountancy, March issue.

The shipping department should be located near the finishing department and at the same time as close as possible to the railroad siding.

A very important factor in the factory and shipping department is the atmospheric condition. Paper is susceptible to every change in the atmosphere and as it absorbs moisture it has a tendency to expand across the grain of the sheet. In absorbing moisture the fibers expand and in drying shrink. The amount of moisture in the air has also a marked effect on the reaction of paper to static electricity with which it often becomes charged as a result of friction caused by the contact of the paper with the steel rollers. A simple method of minimizing this trouble is to keep the press-room warm and to humidify the air. This can easily be done by opening a pet cock in a steam radiator.

Raw Materials

Paper is made from cellulose, the predominant constituent of plant tissues. Many plants and trees are suitable for paper making, but the commercial value of each is determined by the cost of separating the cellulose from resins, fatty substances and other non-fibrous material. Length and strength of the fiber and such important factors as transportation, storage and regularity of supply must also be taken into account.

The materials mostly used in paper making are wood pulps, linen, cotton, hemp, jute, esparto, straw and waste paper. In the manufacture of paper boards, bagasse the waste material of sugar cane after the juice has been pressed out, is being increasingly used.

Wood Pulps: In the United States, nearly all paper is made from wood pulp. The conversion of wood into paper pulp is a process distinct from the manufacture of paper and it is not within the scope of this article.

The supply of pulp comes almost entirely from four species of trees, viz., spruce, hemlock, balsam and poplar. These species grow in the northeastern and lake states where most of the paper mills are located. Large supplies of pulp are, however, imported from Norway, Sweden.

Linen and Cotton: The best linen and cotton rags are used for the highest grades of writing, bond, and ledger papers. Papers made from cotton are softer than those made from linen.

Hemp, Jute, Esparto and Straw: In Europe various kinds of grasses and straw have long been used for paper making. Hemp and jute are used to a small extent. Esparto is used in England for the making of featherweight paper used to give bulk to volumes. Straw is used in considerable quantities for pasteboard, cardboard and wrapping paper.

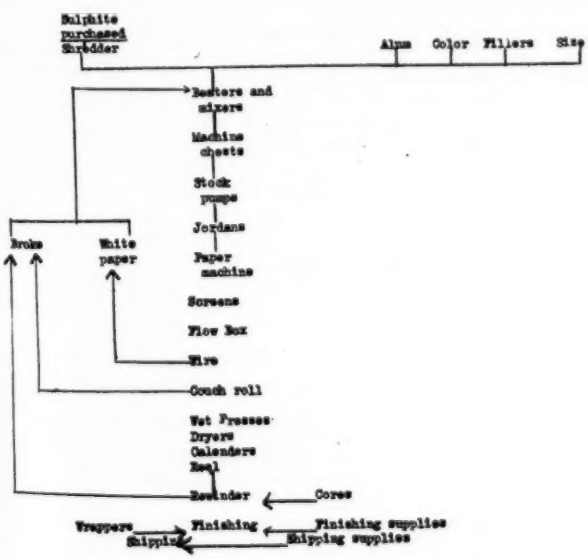

Fig. 1.

Material of this type usually represents seasonal crops and presents difficult problems of storage. Susceptibility to decay is also a serious factor.

Waste Paper: It is estimated that for every ton of waste paper that can be substituted in paper manufacturing, there will be a saving of eight trees of mature growth required to produce a ton of wood pulp. A great variety of old paper is used by the paper industry. In nearly all mills damaged and useless paper is returned to the beaters and used as pulp. This is known as "broke."

The diagram Fig. 1, will serve to indicate in condensed form the processes of manufacture of paper.

As a general proposition, it may be stated that no by-products result from the manufacture of paper. Spoilt paper can usually be cut down into smaller sheets and certain types of paper, notably tissues, can be cut into those very narrow strips used for packing chocolates, etc., known technically as "excelsior." Paper that is unsalable is put back into the beaters and used as pulp.

Material Records

Records should be maintained classifying all materials, equipment and supplies used, and these should contain information as to what the prices are and the names of the suppliers. A catalogue cabinet should be provided with card indexes by class of material and by name of supplier.

Materials on hand are best recorded on cards. Information should be afforded of the quantities received and issued and the balance on hand; maximum and minimum quantities should be set up and rigidly observed. It is usually found convenient also to record the location and classification number as well as the description of the stock. Columns are often provided for values in addition to quantities, the cards thus tying in with the ledger control. For the recording of supplies (as distinct from pulps and other raw materials) space should be provided for supplies ordered and also supplies apportioned. In addition to these cards, another record is kept, in quantities only, in the stores. This system consists of a bin ticket attached to each bin or other form of storage. The bin tickets usually can not be made to serve as the record of stock on hand, but in addition to recording quantities on hand in a compact form they have a disciplinary effect in that each stockman can be required to enter his initials on the bin ticket as he withdraws stock. By specifying minimum quantities on the bin tickets and requiring the stockman to notify the regular stock record clerk when minimum quantities are reached, a double check is provided against overlooking low stocks.

Storekeeping and Inventory Procedure

The materials should be stored in bins, racks, etc., and it will be found desirable to store pulps in a dry place, otherwise variations will occur in the air dried content and incidentally in the weight of the pulp.

Under modern methods of manufacture, a "furnish" is prepared, giving full information of the quality and quantity of the material required for each run or order, and the order number to which it is to be charged. A copy of this goes to the storekeeper as his authority for issuing the material and another copy passes with the other papers to the factory, representing the foreman's authority to withdraw the material. Supplies are issued on requisitions

signed by a foreman. The storekeeper inserts the standing order number indicating the account to which the supplies are to be charged, and after he has made his record on the bin ticket the requisitions are passed to the stores clerk for record on the cards and subsequent entry in the materials-distribution book.

To achieve simplicity in handling the stores, a system of account numbers should be used. This avoids a long detailed description of each kind of material and provides a means of finding quickly the various accounts in the stores ledger.

All purchases should be made through the purchasing department, the functions of which include the securing of the most satisfactory material at the lowest price coupled with the best terms of payment and the most desirable delivery. Purchases will fall broadly into two classes (1) raw materials and (2) general supplies. Raw materials will consist of different grades of pulps, chlorine, size alum, etc. These are usually purchased on forward contracts, which, in the case of pulps, may call for delivery of specified quantities monthly over a period of one or two years. Often contracts will not begin to operate until a date a year or more ahead. General supplies comprise the usual machinery, parts, etc., incidental to any manufacturing business. Usually dry and wet felts, referred to under manufacturing processes, form a substantial part of the supplies inventory.

The receiving department should be provided with a copy of all purchase orders and deliveries should be endorsed on it. The receiving slips should be ruled to show the date received, name of consignor, date of shipment, number of outward order and car number. In the case of raw materials, columns should be provided to record the markings and weights of each bale. Usually about 20 per cent only of the bales are weighed and if the average weight thus established does not vary by more than 1 per cent from the weight according to invoice, no claim is made. Tests are also made of the percentage of air dried contents of the pulp (i. e. the percentage of moisture which the pulp contains) and if this does not correspond with the reputed percentage in the contract, a claim should be made.

The sampling and moisture testing of the pulp must be done according to one of the recognized methods. The auger method is best suited for baled hydraulic pressed pulp in sheets, and rolled pulp. At least 10 per cent, preferably 20 per cent, of the shipment should be sampled. Samples must be drawn from sound and intact bales and from different sections of shipment. The sample is taken by boring into a bale to a certain depth with a special instrument known as an auger which cuts a disc about 4 inches in diameter. The samples as taken are immediately placed in a metal can with tight fitting cover and the net weight is obtained. The wet samples are next placed in an oven 212 deg. until they are what is termed "bone dry" and the weight is again determined. By dividing the percentage "bone dry" by .9 the air dry percentage is obtained. The percentage of moisture should be noted on a tag and put on the bales.

Production

It is absolutely imperative that the condition of the manufacturing department, its percentage of uncompleted work and the factory's capacity for further orders be always known. The task of laying out in detail all work to be done and maintaining a perfect record of progress of work on all orders should be centered in one distinct department.

Department Reports: A report should be made by the factory at the end of each day or shift showing the number of pounds of paper manufactured on each machine during the preceding eight hours, with a notation of the order number, date, machine number, etc. Comments should be added of any breakdown or hold-up, etc., stating the time lost and reason for the delay. Weekly reports showing orders sent to the factory, orders completed, orders shipped, etc., made up to Saturday of each week should also be prepared. A general monthly summary somewhat like the following will be found very useful.

General Monthly Summary

	.....193..
Total no. of lbs. shipped to date this year - -	.....
Total no. of lbs. shipped to date last year - -	.....
Total no. of lbs. ready for shipment this date last year - - - - - - - - - - -	.....
Total no. of lbs. ready for shipment this date this year - - - - - - - - - - -	.....
Total no. of lbs. still to be shipped at this date this year - - - - - - - - - - -	.....
Total no. of lbs. still to be shipped at this date last year - - - - - - - - - - -	.....

Costs

The determination of material costs would be simple if the weight and moisture content of pulp did not show such a wide variation. The first roll of pulp may weigh 75 pounds air dry, the next one 50 pounds and so on. Each roll should have a tag affixed to it showing average weight and moisture content, and it is then only necessary for the beater man to report the nos. of the rolls put in the beater. Alternatively the material should be weighed at the time of its use and a report made of the quantity used. From such reports the number of dry pounds of pulp used can easily be calculated. The percentage of moisture in the pulp is the first figure absolutely necessary in determining material costs.

If one grade of paper only is manufactured the simplest method of costing for materials is to divide the cost of materials used for any given period by the total output in pounds or tons for that period. The quantity of materials used during any period will be ascertained from the "furnishes" for the like period (the "furnish" is the equivalent of the bill of materials).

Where many grades of paper are manufactured, it will be found that each machine as far as practicable, is used for the manufacture of the same grade of paper and changes are made as seldom as possible. In this case the basis of the costing should be per run or per order. Cost of materials used, calculated from reports, for the run (or order) will be divided by the lbs. (or tons) contained in the run (or order) to establish the cost per pound or other unit of weight of the particular grade. A run may be one order or several orders or a given quantity, etc.

The various process supplies, such as glue, rosin, and alum, must be determined in some convenient unit as "pounds per gallon" and the "furnish" should record the number of pounds used.

Wherever it is possible, direct labor should be included with manufacturing burden to establish an inclusive departmental rate known as the "cost of conversion" rate. The labor in the first place should be allocated to departments such as conversion and finishing, steam, building expense, power maintenance, etc. Such part of the labor as is attachable to productive departments should be distributed directly to the machine producing the material on which the labor was expended. Cost of auxiliary departments will be allocated to the machines.

In the manufacture of paper, time is a vital factor. Some pulps are "beaten" longer than others, according to the grade of paper required. Again the output per minute of the paper machine is determined by the quality of the paper being run off, etc. Overhead should, therefore, be allocated on a machine-hour or man-hour basis, preferably the former.

The expenses should be distributed to individual departments and then to individual machines. In computing the machine hour rate, the manufacturing expenses for a given period are allocated to the machines. The total manufacturing expenses thus attachable to each machine is then divided by the number of normal operating hours for the given period to establish the machine-hour rate.

It is common practice in paper mills to establish a "cost of conversion." This is an "all-in" rate which includes labor cost as well as overhead. To determine the cost of conversion of a certain "run" or order, the number of hours involved, from the time the pulp is put in the shredder or beater until finished paper sufficient to complete the "run" or order is made, must be ascertained. The cost of conversion rate multiplied by the hours involved gives the total cost of conversion for the "run."

In the paper industry as all the product passes through one principal conversion process, the simplest method for allocating general mill burden is on an auxiliary conversion machine-hour basis. It will be necessary to estimate the number of machine hours, assuming normal production, for a given period. Total general mill burden for the period divided by estimated machine hours for the same period will establish the auxiliary rate.

In passing it may be well to remark that costs determined as described would necessarily fluctuate with output, as much of the burden is fixed and varies little with quantity of product manufactured. Actual costs should, therefore, be supplemented by pre-determined costs. These establish that the conversion cost of a certain grade of paper is so much, based on normal operating capacity. This will be the scheduled cost of conversion for the ensuing quarter or other period. In addition it is necessary to estimate the cost of the "furnish," the "broke" made and the invisible loss, and this is the total cost per ton and is the scheduled cost.

"Furnish" materials must be known to a nicety and definite factors for conversion to "dry weight" must also be set up. The time necessary for beating must be known and controlled in actual operation.

The following tabulation indicates in a general way how cost and selling price are determined:

Raw material used at beaters	20,000 Lbs.		$1,000.00
Conversion departmental cost, 14 hours @ $20 per hr.			280.00
Material weight	20,000 Lbs.		1,280.00
Broke from Machine	1,000 Lbs.	5%	30.00
Total Rough Paper Cost	17,000 Lbs.	18,000 Lbs.	1,250.00
Invisible waste		2,000 Lbs. (10%)	
Finishing Material			45.00
Finishing Department 150 hours			150.00
			1,450.00
Finishing Broke from 17,000 lbs.		850 Lbs. (5%)	25.00
Inventory Value 16,150 lbs.			1,425.00
General Mill Burden 14 hours			42.00
Mill Cost			1,467.00
Selling Expense			29.00
Freight and Cartage Outward			34.00
Delivered Cost			1,530.00
Profit 14 hours at $20 per hour			280.00
Net Selling Value			$1,810.00

Depreciation

The depreciation rates adopted by a paper mill must have reference to the number of hours per day worked and to the policy adopted in dealing with renewals. Most paper mills run 24 hours a day. The wear and tear in such a case is necessarily heavier than when the machine is used 48 hours a week. Overtime affords less opportunity for ordinary repair and replacement and when a machine is operated for two or three shifts a day, it is under the supervision of a different person during each shift, and there is a tendency for each to leave minor adjustments or matters involving a stoppage to his successor.

The bureau of internal revenue has recently issued a preliminary report on depreciation for many different industries. In a foreword to the report, it is stated that these statistics represent the results of the bureau's depreciation studies over a five year period made with the cooperation of a number of trade associations and corporations. For the pulp and paper industry, the following rates are suggested:

	Probable useful life	Depreciation rate
Absorbing system, milk of lime	10 yrs.	10 %
Balers	15	6⅔
Barkers:		
Drum	10	10
Hand	25	6⅔
Beaters	20	5
Bins, storage, chip	30	3⅓
Bleachers	15	6⅔
Blowers for chips and refuse	10	10
Blower systems for heating	15	6⅔
Burners, sulphur, acid plant	12	8⅓
Calenders	22	4½
Chests, storage		
Concrete	30	3⅓
Steel	22	4½
Wood	15	6⅔
Chippers	20	5
Conveyors		
Inside	15	6⅔
Outside	12	8⅓
Cockers	20	5
Coolers	10	10
Cranes, heavy, hoist and traveling	20	5
Crushers, wood	12	7½
Cutters	20	5
Deckers	20	5
Diffusers	25	4
Digester linings	7	14
Digesters:		
Indirect	22	4½
Rotary	20	5
Vertical, stationary	25	4
Drainers	30	3⅓
Dust Collectors	20	5
Dusters	17	6
Elevators	15	6⅔
Evaporators:		
Disk	17	6
Multiple effect	25	4
Fourdrinier machines	20	5
Furnaces, Rotary	17	6
Grinders	20	5
Hoods, machine, paper:		
Asbestos	20	5
Wood	10	10
Jordans	18	5½
Knotters	15	6⅔
Kollergangs	20	5
Layboys	12	8⅓
Lining (wood) for blow pits	8	12½
Machine-shop equipment	20	5
Melters, sulphur	8	12½
Pans:		
Causticizing	15	6⅔
Wash	25	4
Pits, blow:		
Concrete	30	3⅓
Steel tank	20	5
Platers	13	7½
Presses:		
Bark	7	14
Filter	15	6⅔
Hydraulic	20	5
Pumps:		
Acid	5	20
Centrifugal	15	6⅔
Plunger, Duplex, or Triplex	18	5½
Pressure	15	6⅔
Vacuum	15	6⅔
Reels	15	6⅔
Rifflers:		
Concrete	30	3⅓
Wood	18	5½

	Probable useful life	Depreciation rate
Save-alls	20 yrs.	5%
Screens:		
Silver	12½	8
Rotary	15	6⅔
Shredders	12	8⅓
Slashers	14	7
Smelter, sulphate process	7	14
Splitters	20	5
Stackers, pulpwood	14	7
Tanks:		
Causticizing	20	5
Leeching	22	4½
Mixing (wood)	12	8⅓
Mixing (wood) for clay	20	5
Storage acid	12	8⅓
Storage or washing (concrete)	30	3⅓
Storage or washing (wood)	15	6⅔
Thickeners	20	5
Thrashers	14	7
Towers, absorbing system	15	6⅔
Trimmers, paper	15	6⅔
Trucks, hand	10	10
Washers, bleach or paper stock	20	5
Wet Machines	18	5½
Winders	15	6⅔

The English inland revenue authorities allow 5 per cent on the reducing-balance method for paper-mill machinery working during the day and only 7½ per cent for machinery working both day and night.

Organization Facilities and Markets

In practice it will be found that the selling policy of the particular factory must determine the methods of organization. A factory may manufacture one kind of paper only or it may manufacture several kinds. Again a factory may manufacture to order only or it may manufacture first and sell after, or it may combine the two policies.

For example in a factory manufacturing to order one type of paper only, e.g. tissues, research might be made to ascertain new uses for the particular paper, as for paper napkins or as packing papers, etc. The possibilities of the papers as a good subject for coating or creping might be exhausted also. Incidently sales of paper for new uses might be promoted and new markets opened to advantage. The policy of advertising must of necessity be determined by the special circumstances of the case. In the particular case of tissues made to order samples might be sent with advertising matter to prospective customers.

Adequate warehouse accommodation should be provided where the paper can be stored pending shipment. Even in cases where paper is made to order it will be found that a small stock is carried, arising from cutting paper down into smaller pieces and also from damaged or "culled" rolls. If a roll of paper has soft ends, it may be entirely unsuited for the purpose originally intended, but after cutting off the ends the remainder may be perfectly good. Such rolls may be cut down into sheets and sold. If the paper is sold in rolls these can be stored on the floor—no special facilities are necessary. If the paper is cut into sheets, shelves will be necessary to provide adequate accommodation. The warehouse should be situated as close to the railroad siding as practicable to avoid hauling heavy rolls of paper over unnecessary distances. The warehouse should be equipped with trucks and cranes and any other tackle needed in the lifting and hauling of heavy rolls or bales, etc. Special consideration should be given to the atmospheric conditions within the warehouse and to their effect on paper.

The market for paper is world wide and limited only by the question of prices and tariff.

Uses of Paper

The uses of paper are too well known to require mention. They vary from bank notes to blotting paper and newspaper print to hand-made stationery. Because of the varied nature of the finished product there is a tendency for mills to specialize in one particular type. Tissues, for example, are used quite extensively and include many forms of light packing paper, napkins, handkerchiefs, fancy crepe papers, coated papers, etc., etc.

Methods of Distributing Costs

Paper is distributed either by railroad or water. It is loaded on freight cars or freighters at the warehouse and conveyed to its destination at home or abroad. Rolls of paper are covered with brown packing paper, with special cardboard protectors over the ends of the rolls to protect them. Local sales are distributed by truck.

Packing expense may be considered either as a manufacturing expense or as a distribution expense. If the paper is packed at once after it is manufactured, the expense is usually considered as a manufacturing expense, but if packing is deferred until the paper is shipped, the expense is often considered as a distribution expense. As a rule it is preferable to consider the expense as inseparable from manufacturing, to classify it as a manufacturing expense.

Accounting

In the financial records, accounts will be carried for inventories of raw materials, supplies and finished product, work-in-process, cost of sales, manufacturing, administrative and distribution expense controls, etc. Raw materials and supplies issued to factory will be transferred from inventory to work-in process, monthly. Labor applicable to manufacturing, both direct and indirect, will be accrued monthly and charged to work in process. Manufacturing expense will be transferred monthly from manufacturing expense control to work-in-process. As the paper is finished a transfer is made from work-in-process to finished-goods inventory and on sales from finished-goods inventory to cost of sales.

In the factory ledger, accounts are maintained for work-in-process, direct and indirect labor, the principal classes of burden and general ledger control. Materials used will be charged to work-in-process and credited to general ledger control. Labor at piece work or day rate and burden at standard burden rates will also be transferred from their respective accounts to work-in-process. As the details of labor and burden are furnished to the factory they will be charged to their respective accounts and credited to general ledger control. When the paper is finished, work-in-process is credited and general ledger control is debited.

Control is maintained over the factory ledger by the work-in-process account. This has its reflection in the general ledger account in the factory ledger. The balance of the work-in-process account in the general ledger represents the aggregate of the open balances on the factory ledger.

Special Auditing Features

Special auditing features arise chiefly from the inventory, the chief of which are discussed below:

Raw Materials: In calculating the quantity of pulp, the weight is based on percentage of air dried content. Thus 100,000 pounds of Dexter pulp with an air dried content of 53.70 per cent would mean 53,700 pounds of actual pulp, the balance being moisture. It is on the air dried content that the price is based and this figure must be used for the purpose of valuing the inventory. The extension will be made on a basis of 53,700 pounds and not 100,000 pounds. In taking inventory, the bales of pulp are usually scheduled according to their average contents, as set up on receipt of the pulp weighing a certain percentage

of the bales. Strictly, in addition to scheduling weights, a test should be made of a certain number of bales to ascertain the air dried content, as it is possible that the pulp may have absorbed more moisture since receipt. A difference usually exists between the quantities shown by the books and those revealed by the physical count.

FORWARD CONTRACTS FOR PULPS, ETC.: It will usually be found that contracts have been entered into for the delivery of pulps, chlorine, starch, coal, etc., over the ensuing year or two. The contracts themselves should be inspected and the undelivered quantities should be scheduled. A register is usually kept showing quantities under contract and already delivered under each contract. If it is thought advisable, confirmation may be obtained from the vendor. If goods in transit are set up at the date of the balance sheet, care should be taken to see that such goods have been adjusted in the undelivered quantities under the forward contracts. It will be found that the contracts are for various prices and it is a fine point to determine whether or not these prices are above market price at the date of the balance-sheet. Determination of a fair market price at the date of the balance-sheet may be no simple matter. It is interesting to compare the prices according to the contracts for future delivery with the average price paid for pulp during the period under review, on which the profit or loss for that period has been made. Often a contract entered into at a high price may be canceled in consideration of a new contract made for, say, double the amount for twice the period. Thus at the date of the balance-sheet there may be an outstanding contract for the delivery of 1,200 tons of pulp over a period of a year at the rate of 100 tons a month. The contract price may be $24 a ton and the market price at the date of the balance-sheet $22. Between the date of the balance-sheet and the date of the audit the price of pulp may be dropped to, say, $20 and the original contract may have been cancelled and a new one entered into for 2,400 tons at $21.85 per ton, a slight reduction in price from the old contract in consideration of increasing the quantities to be delivered. The new contract may call for delivery over a period of two years. In such a case as this the price under the new contract is less than the market price on the day of the balance-sheet, but may be higher than the market price likely to prevail during the life of the contract. In the circumstances, it would seem wise to set up a reserve for the difference between the price stipulated in the old contract and the market price on the day of the balance-sheet. Should it be considered that the dip to $20 was purely temporary and as a fact the new contract had been secured on exceptional terms, there may be grounds for contending that no reserve is necessary.

FINISHED PAPER: The quantity of finished paper carried will be determined by the policy of the management. Some mills manufacture only to order, while others manufacture for stock. Whatever the policy pursued, all mills carry "cull" rolls and cut down pieces. It is the auditor's duty to see that these are valued at a fair market price, which may be considerably less than the price for paper in perfect condition. The paper on hand turned out in the last day or two before the balance-sheet which may be classified either as work-in-process or as finished paper, can usually be verified with the daily production reports sent to the office after each shift.

It is often possible to reconcile total production with sales and establish the correctness of the inventory of finished paper. Production, in tons or pounds, can be ascertained from the monthly summaries of the daily production sheets and the sales, in tons or pounds from the monthly summaries of sales.

Obituary

Alfred D. Elsworth

SCARSDALE, N. Y., April 14, 1933—Alfred D. Elsworth, for many years in the wholesale paper business in New York City, died here today of heart disease at his home, 1 Seeley Place, after a six weeks' illness. He was born in New York, attended the public schools there and spent most of his life in the paper trade, retiring twenty years ago. For many years he resided at Irvington-on-Hudson.

Mr. Elsworth was a member of the Seventh Regiment Veterans Association, the Protestant Episcopal Church, the New York Athletic Club and the Scarsdale Golf Club. Surviving are a widow, the former Miss Katherine Meagher, and a brother, Harold J. Elsworth of Irvington.

Grenville G. Abernethy

WESTFIELD, N. J., April 15, 1933—Grenville G. Abernethy, president of the Standard Paper Products Company, Irvington, N. J., makers of papers and envelopes, died this morning at his home here, 31 Stoneleigh Park, after a brief illness.

Born in Brooklyn forty-nine years ago, he lived here only a short time. He was a graduate of Princeton University. He had been an assistant sales manager of the International Paper Company in New York before joining the Standard concern. Surviving are a widow, Harriet Smith Abernethy, and two children, Ann and Arthur.

Alexander Conkey

APPLETON, Wis., April 17, 1933—Alexander Conkey, vice president of the Badger Tissue Mills, Kaukauna, Wis., died at his home in that city on April 9 after an illness since last December. He was 69 years old. Mr. Conkey had been connected with the company since 1913. Previous to that time, he was employed by the Combined Locks Paper Company. Burial took place at Appleton, Wis.

Standardizing Paper Forms Abroad

WASHINGTON, D. C., April 19, 1933—Standardization of paper forms has been the subject of considerable research in various European countries, including the Scandinavian countries, Finland and Germany according to a report from Commercial Attache Klath at Stockholm. With the ever increasing exchange of written and printed matter between private individuals as well as institutions, the inconvenience of the pronounced lack of uniformity with regard to the size of writing and printing paper has been very much emphasized. Particularly evident has been the inconvenience relating to the efficient and practical handling, filing, and arranging of letters, forms, etc.

TAPPI New England Section to Meet

The New England Section of the Technical Association of the Pulp and Paper Industry will meet at the Nonotuck Hotel, Holyoke, Mass., Friday evening, May 5th.

The speaker of the evening will be Edwin Sutermeister, chief chemist, S. D. Warren Company, Cumberland Mills, Maine, who will talk on "Paper Sizing."

It is expected that Allen Abrams, President of the Technical Association will be present to present the Section with its charter.

Anyone interested is welcome to attend.

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TAPPI CONVERTING DIVISION

The Technical Association of the Pulp and Paper Industry has endeavored to organize itself to meet the particular requirements of its members. Analyses of the membership from time to time shows distinct trends that must be taken care of. The eighteen years of its existence enabled many of its members who were mill chemists or engineers in 1915 and 1916 to become mill managers and executives. To serve these members a management division was organized two years ago.

The competition between materials and the demand for a more scientific knowledge of use requirements of paper has led many companies to consider the direct introduction of technically trained men into their sales organization or to have such men work in cooperation with their salesmen in meeting their customers and studying their technical problems relative to the requirements of papers in use.

To meet this new and growing requirement the Technical Association has organized a converting and consuming division which is dealing with the fundamental subjects of paper coating, paper and board laminating, container manufacture, and the graphic arts industries.

A. W. Nickerson of the research department of Robert Gair Company was selected as general chairman of the division. With him are associated J. J. O'Connor of the Mead Corporation as chairman of the Coating Committee; E. C. Lathrop, formerly of the Celotex Company and now a consulting engineer, as chairman of the Laminating Committee; Pierre Drewsen of the Hinde & Dauch Paper Company as chairman of the Container Committee; and Charles Clarkson, vice-president of the International Printing Ink Corporation, as chairman of the Graphic Arts Committee.

The Coating Committee recently held symposia on coating, adhesives and pigments. Its plan is to investigate the technical aspects of paper coating with such materials as casein, starch, glue, gum, wax, size, varnish, cellulose esters, etc. Its field of work covers both water base coating and non-water base coating.

The Laminating Committee will interest itself in the processes of laminating into multi-ply articles such as wallboard, corrugated and solid fiber, blotting, cores and spiral tubes and display cards.

The Container Committee will deal with the processes of conversion to containers such as folding boxes and cartons, set-up boxes, pails, spiral containers, envelopes and bags.

The Graphic Arts Committee will cover the processes of printing, ruling, folding, stapling, etc. At the annual meeting of the association in February, this committee conducted an interesting and well attended meeting dealing with printing paper requirements.

With the chairman of the aforementioned committees are associated groups of individuals who have had many years of experience in their prospective fields. It is expected that the work of the division will do much to bring the maker and user of paper to a common understanding of these problems and to a satisfactory solution of them.

SOME FUNDAMENTALS OF ASSOCIATION ADVERTISING PROCEDURE

"Business statesman" seems a strange expression to use in this time of difficulties for so many banks and businesses, but F. J. Ross amply justifies it in his book on business associations and their functions. The book answers pertinently twenty-nine fundamental questions about business associations and demonstrates conclusively the need of business statesmanship in forming such associations in this era of competition among industries. In answer to the question whether there is room for business statesmanship amid competitive antagonisms, the author writes:

"Until an industry in its committee and convention work reaches the conception that competitors, however keen, have extremely important common interests—that a healthy state of their common interests is indispensable to constructive competition—that destructive competition is an invariable reflection on business statesmanship—that there is more actual profit to accrue from the money invested in promoting the common cause than from an equal amount spent in destructive competition—it is not ready to start."

Decrying suspicion of all sorts in such an organization, he writes:

"A man who thinks only competitively cannot be a helpful subscriber nor a helpful member of a committee which is to work cooperatively for a common cause. . . . This kind of thinking belongs to business politics but does not belong to the business statemanship necessary to successful associative endeavor."

The present need for such organizations is pointed out

in the introduction to this book by Hugh E. Agnew, Chairman of the Department of Marketing of the School of Commerce, Accounts and Finance of New York University.

"In many industries," he writes, "the encroachment of outside factors constitutes a real menace. The radio has virtually destroyed the phonograph industry and badly curtailed the sale of musical instruments. The automobile has reduced walking to such an extent that for the past decade the manufacturers of men's shoes have been facing a declining market both in the per capita expenditure and in the actual number of shoes sold. Other industries are similarly threatened. Frozen foods are a threat to the canning industry; aviation to long distance passenger trains; oil burners to anthracite coal and the use of both of these may be curtailed by electric heating and ventilating systems."

He also points out that co-operation within industries is being fostered by the Federal Government so that the fear of the interference of courts with legitimate promotional activities is no longer a factor, but the author of the book gets at the meat of the matter in his foreword.

"When the members of an industry," he writes, "because of distressing competition, lose sight of their common cause, they have done a sad thing. Their industry loses precious ground it will be long in regaining; their common market becomes demoralized.

"Far-seeing heads of business realize that they can expect little in the way of upturn in their own profits unless the industry of which they are a part has become more healthy. To deal with the internal problems of an industry calls for close co-operation within it—and sometimes for cooperative advertising. . . . The pooled strength of an industry, expressed in an associational advertising campaign, will keep its commodity well before the public at a light proportional cost per member."

He lays down as the principles of the preparation for such a campaign recognition by competitors within an industry of their common cause, the need for harmony, the need for increased consumption of the services or products of the industry ("When you have brought everyone in the land capable of using your product or your service to a full understanding of it, to a true and constant sense of its value, you are going to get your maximum volume of that product—but not until then.") the need for initiative within the industry, the need for utilizing the brains of its own best leaders, the need for adopting a sound policy and a system of financing generally satisfactory to its members, the need not to let competitive impulses stifle cooperative impulses of far greater value, the advisability of including in the organization on a fair basis those who produce the major materials from which the commodity is manufactured and also related industries, and finally the need of a true and sustained policy.

The rest of the book contains a wealth of detail on campaign procedure. It recommends the setting up of a campaign headquarters and staff to attend to matters pertaining to traffic, legislation, raw materials, manufacturing standards, trade practices, credit, statistics and conventions, and faces boldly the vexed question whether the organization should employ a publicity counsel as well as an advertising agency.

"If there is a technical phase," it says, "to the products of the industry and they are under constant scientific development which from time to time furnishes distinct news, as, for example, in the electrical field, there may be clear need for publicity counsel. Publicity and advertising are two separate forces. Each has its own technique.

"In no instance should the advertising agency offer an advertising contract to the publisher with one hand and demand publicity with the other. That publicity which editors are willing to print because of the (news) merit of it is the only publicity which should be sought."

The author of this interesting book, "Some Fundamentals of Association Advertising Procedure," is F. J. Ross, chairman of Fuller & Smith & Ross, Inc. The introduction is by Hugh E. Agnew, chairman of the Department of Marketing, School of Commerce, Accounts and Finance, New York University, and secretary-treasurer of the National Association of Teachers of Marketing and Advertising. The volume is published by Fuller & Smith & Ross, Inc., New York, Cleveland and San Francisco.

I. P. Reopens Piercefield Mill

[FROM OUR REGULAR CORRESPONDENT]

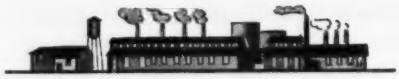
PIERCEFIELD, N. Y., April 17, 1933—The reopening of the local branch of the International Paper Company came as a pleasant surprise to local residents as it had been predicted that the village would soon take on a deserted appearance if operations were discontinued. The property was acquired by the company many years ago and was enlarged until it became an important factor in its great chain of mills. For many years news print and catalog paper were the principal products but in late years the output has been confined to bond and other grades of heavily calendered paper which have gained an important place in the sales market. It is now rumored that further changes are contemplated which will incidentally mean the introduction of new products here.

Since taking over the plant the company has made many improvements besides being responsible to a large extent for the rapid growth of the village. A private railroad is also maintained extending from the local station to the plant over which all products are shipped. For many years huge quantities of pulp wood logs have been floated down the Racquette River to the mill from neighboring mountains but recently the company has been obtaining its supply from another source. Scores of dwellings were also constructed by the company for its 250 employees and a large community building for recreational purposes.

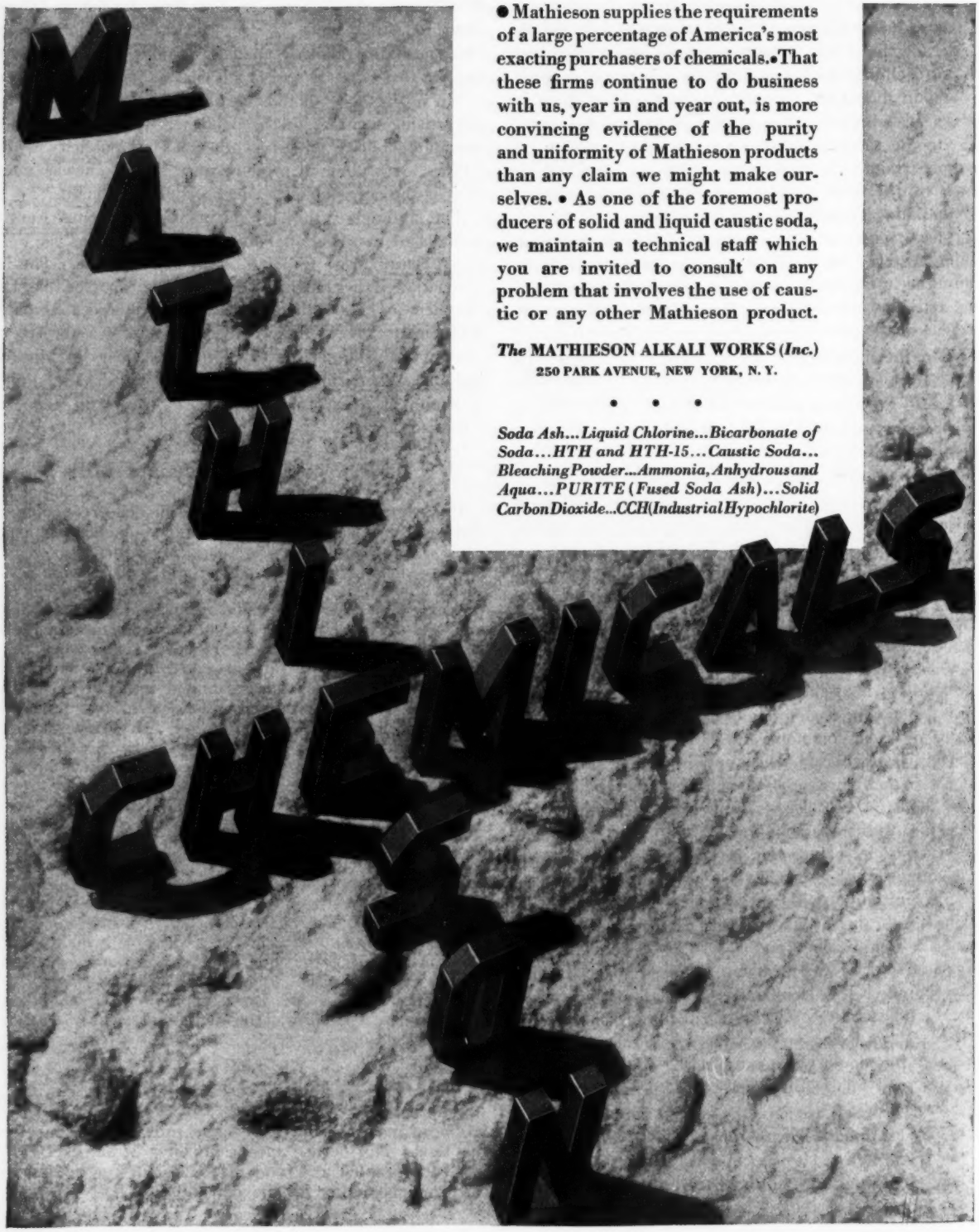
The announcement of the resumption of operations was welcomed by virtually all residents and further development of the village is expected because of this decision.

Great Northern Gets Tax Rebate

WASHINGTON, D. C., April 19, 1933—Announcement has been made by the Bureau of Internal Revenue that the Great Northern Paper Company, Millinocket, Me., has been granted a refund of $51,262.74 for overassessment of income tax for the year 1929.



Caustic Soda



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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

United States Patents on Paper Making

First Quarter, 1933

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

Note—Copies of any of the following patents may be obtained from the Patent Office, Washington, D. C., for ten cents ($0.10) each. Stamps and personal checks are not accepted.

JANUARY 3, 1933

1,892,672. Method of treating imperfect shingles. Walter S. Johnston, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed Nov. 9, 1928. 3 claims. (Cl. 91-70). Method of resurfacing imperfect shingles.

1,892,675. Method of and apparatus for forming sulphurized fiber board containers. Russell F. Lyon and Peter J. Christman, assignors to Marathon Paper Mills Company, Rothschild, Wis. Filed Oct. 15, 1931. 14 claims. (Cl. 93-39).

1,892,812. Corrugating machine. Bernard Rous, Brooklyn, N. Y. Filed Aug. 8, 1931. 10 claims. (Cl. 154-30).

1,892,873. Process of surfacing board and article therefor. William A. Darrah, Chicago, Ill. Filed June 9, 1928. 11 claims. (Cl. 92-40). The board has an absorbent core and a hard surface containing chemically altered cellulose.

1,892,939. Grease-resisting box board. Carleton Ellis, assignor to Ellis-Foster Company, Montclair, N. J. Filed Aug. 22, 1927. 8 claims. (Cl. 91-70). Paper carrying a nitrocellulose and a polybasic acid-polyhydric alcohol synthetic resin.

1,893,028. Composition shingle. Harry E. Honigbaum, Richmond Hills, N. Y. Filed Apr. 27, 1923. 4 claims. (Cl. 108-7).

1,893,448. Wadding. Jean Schmidt, Strasbourg, France. Filed July 24, 1926. 1 claim. (Cl. 154-2). Cellulose paste is sized and the sized paste converted into wadding.

JANUARY 10, 1933

1,893,497. Apparatus and method of drying pulp articles. Fred D. Gray, assignor to Holed-Tite Packing Corporation, a Corporation of New York. Filed Mar. 15, 1929. 11 claims. (Cl. 34-17).

1,893,554. Box-making machine. Cutler D. Knowlton, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed Aug. 20, 1928. 14 claims. (Cl. 93-36).

1,893,599. Protective coatings. Almeric Walter Seymour, Los Angeles, Calif. Filed May 23, 1930. 4 claims. (Cl. 154-2). A bituminous undercoating of colloidal nature is first applied, followed by a bituminous outer-coating of non-colloidal nature.

1,893,669. Sheet for sanitary and surgical purposes and method of making the same. Levi L. Gilbert, Muskegon, Mich. Filed June 19, 1929. 1 claim. (Cl. 154-40). A thin layer of asphalt is placed between a pair of paper sheets and heated to a temperature to melt the asphalt.

1,893,678. Paper making process and machine. Ernest Poirier, Waterville, Me., assignor of part to John W. Stobie. Filed Sept. 16, 1931. 25 claims. (Cl. 92-46). Method of feeding paper stock to a paper making wire.

1,893,717. Creping webs of paper and the like. William Wallace Rowe, assignor to The Paper Service Company, Lockland, Ohio. Filed Dec. 31, 1930. 9 claims. (Cl. 92-69).

1,893,783. Asbestos cement building material. William J. Moeller, assignor to The Philip Carey Manufacturing Company, Lockland, Cincinnati, Ohio. Filed June 25, 1928. 7 claims. (Cl. 154-45.9).

1,893,923. Manufacture of shoe stiffener material. Frank O. Woodruff, assignor to Harry H. Beckwith, Brookline, Mass. Filed Aug. 12, 1931. 8 claims. (Cl. 92-3).

1,893,924. Manufacture of shoe stiffener material. Frank O. Woodruff, assignor to Harry H. Beckwith, Brookline, Mass. Filed Aug. 12, 1931. 10 claims. (Cl. 91-68).

1,894,089. Molding machine for pulp. William J. De Reamer, assignor to Mapes Consolidated Manufacturing Company, Griffith, Ind. Filed Nov. 16, 1931. 32 claims. (Cl. 92-56).

1,894,131. Paper box machine. Edwin G. Staude, Minneapolis, Minn. Filed Mar. 11, 1929. 21 claims. (Cl. 93-49).

1,894,132. Color analyzer. Charles W. Stone, assignor to General Electric Company, Schenectady, N. Y. Filed Aug. 10, 1931. 6 claims. (Cl. 234-5.5).

1,894,219. Reenforced paper. George E. Gibbs, assignor to American Reenforced Paper Company, Attleboro, Mass. Filed Apr. 3, 1931. 4 claims. (Cl. 154-52). Two sheets of paper are secured with waterproof adhesive, reenforcing material secured between the sheets by the adhesive.

1,894,253. Mechanism for winding paper into rolls. Philip Napoleon McCarthy and Paul Masson, assignors to Pope Alliance Corporation, Portland, Me. Filed Aug. 30, 1929. 7 claims. (Cl. 242-65).

JANUARY 17, 1933

1,894,281. Method and means for making tight rolls. Philip D. Parsons, assignor to Scott Paper Company, Chester, Pa. Filed May 15, 1930. 3 claims. (Cl. 242-65).

1,894,295. Container construction. Nicholas Scandore, Brooklyn, N. Y. Filed Feb. 21, 1931. 5 claims. (Cl. 93-39).

1,894,472. Combined light and heavy weight paper making machine. Max Oberdorfer and Joseph E. Ryberg, St. Helens, Oreg. Filed Mar. 12, 1932. 2 claims. (Cl. 92-49).

1,849,501. Manufacture of wood pulp. Maurice C. Taylor and James F. White, assignors to The Mathieson Alkali Works, Inc., New York, N. Y. Filed Apr. 17, 1930. 3 claims. (Cl. 92-9). Use of an aqueous solution containing a chloite of a metal comprising the alkali metals and the alkaline earth metals.

1,894,566. Method of waterproofing paper. George James Manson, assignor to Manson Chemical Company, Montclair, N. J. Filed Apr. 25, 1927. 10 claims. (Cl. 92-21).

1,894,567. Fibrous product. George James Manson, assignor to Manson Chemical Company, Montclair, N. J. Filed Apr. 25, 1927. 9 claims. (Cl. 92-21). Waterproofed product.

1,894,577. Production of fiber. Sidney D. Wells, assignor to The Mine and Smelter Supply Company, Denver, Colo. Filed Sept. 17, 1927. 1 claim. (Cl. 92-20). Use of rod mill on softened but not pulped material.

1,894,614. Strip shingle. Jules L. Wettlaufer assignor to The Patent and Licensing Corporation, Boston, Mass. Filed May 4, 1929. 2 claims. (Cl. 108-7).

1,894,615. Strip shingle. Jules L. Wettlaufer, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed May 4, 1929. 3 claims. (Cl. 108-7).

1,894,620. Process of producing a white filler product from sulphate lime mud. Otto Kress, Appleton, Wis. Filed June 26, 1929. 1 claim. (Cl. 23-49).

1,894,726. Rotating paper bag machine. Hilding William Beckman, Malmo, Sweden. Filed Apr. 13, 1931. 27 claims. (Cl. 93-14).

1,894,731. Stencil paper. Kenneth W. Carr, assignor to Ditto, Inc., Chicago, Ill. Filed Sept. 29, 1926. 17 claims. Cl. 41-38.6). Synthetic resin is used as a coating.

1,894,754. Waterproof constructional material. Max E. Campbell, assignor to The Flintkote Corporation, Boston, Mass. Filed Mar. 22, 1929. 2 claims. (Cl. 108-7).

1,894,774. Transfer. Winthrop Stanley Lawrence, assignor to Kaumagraph Company, New York, N. Y. Filed July 28, 1930. 3 claims. (Cl. 134-36). A paper base with fusible marking thereon.

1,894,777. Production of vegetable fiber sheets. William H. Mason, assignor to Masonic Corporation, Laurel, Miss. Filed Apr. 3, 1929. 13 claims. (Cl. 92-61).

1,894,778. Multiple fiber board production. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed Jan. 23, 1931. 16 claims. (Cl. 92-39).

1,894,907. Indurated cellulosic product and method of making the same. Duncalf W. Hollingworth and Lester W. Tarr, assignors to Continental-Diamond Fibre Company, Newark, N. J. Filed Jan. 8, 1932. 20 claims. (Cl. 154-34). Paper is treated with phosphoric, sulphuric and acetic acids.

JANUARY 24, 1933

1,894,959. Method of waterproofing fibrous products. George James Manson, assignor to Manson Chemical Company, Montclair, N. J. Filed Apr. 25, 1927. 12 claims. (Cl. 92-21).

1,895,039. Suction press roll for paper making machinery. John F. Joseph, assignor to The Cincinnati Rubber Manufacturing Company, Norwood, Ohio. Filed July 30, 1932. 6 claims. (Cl. 92-53).

1,895,188. Breaker and beater roll. John D. Haskell, assignor to Dilts Machine Works, Inc., Fulton, N. Y. Filed June 1, 1932. 15 claims. (Cl. 92-22).

1,895,266. Wood pulp digester with internal circulation conduit. Einar Morerud, Oslo, Norway. Filed July 16, 1932. 5 claims. (Cl. 92-7).

1,895,527. Paper manufacture. Joseph H. Swan, assignor to The Gardner-Richardson Company, Middletown, Ohio. Filed Aug. 30, 1929. 19 claims. (Cl. 154-50). A hard sized sheet, having a coating including a polyhydric alcohol, an alkali metal silicate and an akali metal compound which is alkaline in character.

1,895,567. Lining panel for vehicle bodies. Sidney J. Blum, assignor to Arvey Corporation, Detroit, Mich. Filed July 6, 1931. 5 claims. (Cl. 154-46). A semi-rigid board and a felt layer applied to the inner face of the board.

1,895,605. Method of producing seams in wire fabrics. William Eugene Buchanan, assignor to Appleton Wire Works, Inc., Appleton, Wis. Filed May 28, 1931. 5 claims. (Cl. 245-10).

1,895,687. Process of and device for manufacturing hollow bodies by means of fibrous materials. Arnold Ruitshauser, Zurich, Switzerland. Filed May 16, 1931. 4 claims. (Cl. 92-54).

1,895,711. Coated sheet material. Charles E. Foley, assignor to Nashua Gummed and Coated Paper Company, Nashua, N. H. Filed July 17, 1931. 1 claim. (Cl. 91-68).

1,895,978. Adhesive sheeting and masking for painting. Richard Gurley Drew, assignor to Minnesota Mining and Manufacturing Company, St.

Paul, Minn. Filed Mar. 7, 1931. 14 claims. (Cl. 91-68).

1,896,037. Composite corrugated and solid fiber board. Paul F. Boeye, assignor to Waldorf Paper Products Company, St. Paul, Minn. Filed Jan. 5, 1931. 4 claims. (Cl. 154-55).

1,896,038. Manufacture of pulp, etc. Linn Bradley and Edward P. McKeefe, assignors to Bradley-McKeefe Corporation, New York, N. Y. Filed Apr. 4, 1924. 42 claims. (Cl. 92-11). Use of an alkali and an alkali thiosulphate.

FEBRUARY 7, 1933

1,896,076. Container and manufacture of same. George O. Frostad, assignor to National Paper Can Company, Milwaukee, Wis. Filed July 25, 1929. 11 claims. (Cl. 229-1.5).

1,896,215. Grease resistant paper. Theodore F. Bradley, Westfield, N. J. Filed Aug. 31, 1927. 11 claims. (Cl. 91-70). Glassine paper carrying a coating of a cellulose ester, a wax and a resin.

1,896,344. Process of manufacturing wood pulp in multiple stages. Henry K. Benson, Seattle, Wash. Filed June 22, 1931. 5 claims. (Cl. 92-6).

1,896,638. Apparatus for coating sheet material with granular material. John C. MacIldowie, assignor to Asbestos Wood and Shingle Co., Nashua, N. H. Filed Aug. 30, 1926. 7 claims. (Cl. 91-67.9).

1,896,689. Building material and method of making the same. Hugh M. Spencer, assignor to The Upson Company, Lockport, N. Y. Filed Feb. 23, 1932. 8 claims. (Cl. 154-2).

FEBRUARY 14, 1933

1,897,139. Method of making roofing stock. Frederick C. Overbury, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed May 27, 1926. 6 claims. (Cl. 154-2).

1,897,145. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed May 1, 1931. 22 claims. (Cl. 92-21). Use of an alkaline filler.

1,897,156. Pulp and dirt separator. Harold D. Wells, Glens Falls, N. Y. Filed Sept. 26, 1931. 7 claims. (Cl. 92-35).

1,897,157. Paper stuff hydrator. Harold Donald Wells, Glens Falls, N. Y. Filed Feb. 13, 1932. 11 claims. (Cl. 92-26).

1,897,198. Paper board. Charles L. Keller, assignor to The Richardson Company, Lockland, Ohio. Filed June 27, 1927. 7 claims. (Cl. 93-36). The board is coated with a tenacious layer of flexible substance.

1,897,232. Method and means for weaving fourdrinier wires. William Eugene Buchanan, assignor to Appleton Wire Works, Inc., Appleton, Wis. Filed June 23, 1930. 6 claims. (Cl. 139-291).

1,897,401. Centrifugal molding device. William R. Seigle, assignor to Johns-Manville Corporation, New York, N. Y. Filed Feb. 27, 1931. 9 claims. (Cl. 92-58).

1,897,479. Manufacture of fibrous sheet material. Ernest Hopkinson, assignor to The Naugatuck Chemical Company, Naugatuck, Conn. Filed Oct. 5, 1928. 13 claims. (Cl. 92-39). Method of spraying an admixture of fibrous pulp material and connecting it in sheet form.

1,897,620. Continuous process of reducing or reforming wood or other fibrous material. Roland B. Respess, assignor to Respats, Inc., Providence, R. I. Filed Jan. 15, 1932. 8 claims. (Cl. 92-20). Use of a reducing mill.

1,897,651. Flexible treated material and method of making the same. Baron Hubert Frederick Richards and Arthur H. Haroldson, assignors to Continental Diamond Fibre Company, Newark, N. J. Filed Mar. 17, 1930. 4 claims. (Cl. 91-70). Material impregnated with phenol-formaldehyde condensation product.

1,897,694. Paper composition and process of making same. Carleton Ellis, Montclair, N. J. Filed Apr. 12, 1926. 10 claims. (Cl. 92-21). Wax and a light colored petroleum oil are incorporated with paper pulp.

1,897,715. Knock-down box manufacture. John R. Van Wormer, assignor to The Guardian Trust Company, Cleveland, Ohio. Filed June 16, 1924. 32 claims. (Cl. 93-49).

1,897,864. Printer's blanket. Elmer C. Schacht, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Nov. 21, 1932. 39 claims. (Cl. 154-54.5).

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R18,472. Coated paper. Frederick W. Farrell, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn. Filed Aug. 30, 1930. Original No. 1,683,453, dated Sept. 4, 1928. Reissue No. 17,760, dated Aug. 5, 1930. 16 claims. (Cl. 91-68).

1,898,041. Felt drier. William P. Feeney, Manistee, Mich. Filed Nov. 11, 1930. 2 claims. (Cl. 34-48).

1,898,066. Method of measuring web characteristics. Louis P. Schweitzer and Samuel M. Bagno, assignor to Peter J. Schweitzer, Inc., New York, N. Y. Filed Oct. 22, 1930. 3 claims. (Cl. 73-51). Use of a beam of radiant energy projected through the paper web to a thermo-electric couple and a second beam against a second thermo-electric couple.

1,898,098. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Apr. 28, 1931. 24 claims. (Cl. 92-21). Alkaline filler.

1,898,260. Machine for forming tubing around firework fuse material. Joseph Gioiosa, Milton, Mass. Filed Mar. 28, 1931. 8 claims. (Cl. 154-1).

1,898,372. Method and means for forming sheets of pulp. William J. Hyde, assignor to The Northwest Paper Company, Cloquet, Minn. Filed Mar. 18, 1931. 20 claims. (Cl. 92-44).

1,898,413. Winding band to be wound on rolls used in the paper making and allied trades. Max Wenzl, Neidhardtstal, Germany. Filed Feb. 25, 1930. 6 claims. (Cl. 92-47).

1,898,541. Means for producing acid liquor. Jacob Darre Jenssen, assignor to G. D. Jenssen Company, New York, N. Y. Filed June 17, 1929. 3 claims. (Cl. 23-262).

1,898,542. Manufacture of sulphite acid liquor. Jacob Darre Jenssen, assignor to G. D. Jenssen Company, New York, N. Y. Filed July 7, 1930. 1 claim. (Cl. 23-261).

1,898,545. Automatic felt washer for paper machines. Joseph D. Kaster, assignor to Oregon Pulp and Paper Company, Salem, Oreg. Filed June 30, 1931. 3 claims. (Cl. 92-50).

1,898,611. Method of and apparatus for making paper. Earl E. Berry and Theodore C. Roberts, assignors to Beloit Iron Works, Beloit, Wis. Filed June 27, 1931. 17 claims. (Cl. 92-38). A pick-up type of felt.

1,898,612. Manufacture of pulp and paper. Linn Bradley and Edward P. McKeefe, assignors to Bradley-McKeefe Corporation, New York, N. Y. Filed Sept. 27, 1923. 18 claims. (Cl. 92-11). Process for pulp from heavy, hard woods.

1,898,613. Manufacture of pulp, etc. Linn Bradley and Edward P. McKeefe, assignors to Bradley-McKeefe Corporation, New York, N. Y. Filed May 14, 1924. 23 claims. (Cl. 92-9).

1,898,682. Paper-making process. Donald K. Pattillo, George E. Corson and Herbert L. Thompson, assignors to Clinton Corn Syrup Refining Company, Clinton, Iowa. Filed Apr. 25, 1931. 4 claims. (Cl. 92-21). Adding an amylaceous bonding material to the pulp between the beater and the paper making machine.

1,898,877. Method of treating ramie and allied fibers. Charles F. Kenyon, Shannock, R. I. Filed Mar. 1, 1932. 6 claims. (Cl. 92-10).

1,898,881. Manufacture of tubes from fibrous pulps. Alessandro Magnani, Casale Monferrato, Italy. Filed Oct. 24, 1930. 16 claims. (Cl. 92-54).

1,898,985. Rubber bonded asbestos and method of making. Robert M. Day, assignor to Dewey and Almy Chemical Company, Cambridge, Mass. Filed June 10, 1930. 3 claims. (Cl. 92-21).

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1,899,056. Process of making felted mineral fiber. Edward R. Powell, assignor to banner Rock Corporation, Alexandria, Ind. Filed Aug. 24, 1928. 13 claims. (Cl. 154-28).

1,899,086. Paper product sized with petroleum hydrocarbons and process of making the same. Carleton Ellis, assignor to Ellis-Foster Company, Montclair, N. J. Filed Sept. 20, 1929. 11 claims. (Cl. 92-21).

1,899,106. Method of and apparatus for treating pulp. George A. Richter and Elwood Ebie, assignors to Brown Company, Berlin, N. H. Filed Dec. 13, 1924. 8 claims. (Cl. 92-29). Arrangement of screens.

1,899,197. Art of casting fiber articles. Ernest Huff and Andrew Keiding, assignors to American Lace Paper Company, Milwaukee, Wis. Filed June 19, 1930. 18 claims. (Cl. 92-57).

1,899,223. Manufacture of purified cellulose material from hemp material. Edward Chauncey Worden, 1st, assignor to Hanson and Orth, New York, N. Y. Filed Apr. 20, 1929. 4 claims. (Cl. 92-14).

1,899,256. Drier roll. Thomas L. Brannen, assignor to Brown Company, Berlin, N. H. Filed Sept. 6, 1930. 2 claims. (Cl. 34-4).

1,899,435. Expansion joint. Albert C. Fischer, assignor to The Philip Carey Manufacturing Company, Cincinnati, Ohio. Filed May 5, 1926. 7 claims. (Cl. 94-18).

1,899,591. Laminated material. Harry D. Segar, assignor to General Electric Company, Schenectady, N. Y. Filed Sept. 8, 1930. 8 claims. (Cl. 154-2.6). Fibrous material cemented with shellac and an alkyd resin.

1,899,637. Chemical pulping and refining process. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed June 17, 1931. 4 claims. (Cl. 92-11).

1,899,652. Machine for making pasteboard boxes. John H. Stortz, Philadelphia, Pa. Filed May 16, 1930. 10 claims. (Cl. 93-36).

1,899,653. Plaster board or other panel structure. Edmond F. Venzie, assignor to Frederick M. Venzie, Philadelphia, Pa. Filed June 16, 1932. 7 claims. (Cl. 154-45.9).

1,899,655. Machine for producing gummed webs. Albert S. Webster, assignor to American Bank Note Company, New York, N. Y. Filed Dec. 30, 1930. 9 claims. (Cl. 91-18).

1,899,688. Process for the production of impregnated paper and the like. Harry Hill, assignor to Callender's Cable and Construction Company, Limited, London, England. Filed Mar. 31, 1931. 2 claims. (Cl. 91-68).

1,899,768. Sawdust wood fiber board and method of making same. James V. Nevin, assignor to The Pacific Lumber Company, San Francisco, Calif. Filed Dec. 22, 1930. 10 claims. (Cl. 18-55).

1,899,774. Method of and apparatus for testing loading material used in paper manufacture. Henry A. Rothchild and John A. Limpert, assignors to The Paper Patents Company, Neenah, Wis. Filed Oct. 25, 1929. 14 claims. (Cl. 73-51).

1,899,892. Heat-insulated paper bag and method of making the same. John N. d'Este and William R. Tower, assignor to Tuffy Pad and Excelsior, Inc., Boston, Mass. Filed Aug. 27, 1931. 7 claims. (Cl. 229-53).

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1,899,989. Process of treating cellulose fiber pulp. Hellmuth C. Schwalbe, assignor to Dill and Collins Co., Philadelphia, Pa. Filed Apr. 4, 1931. 9 claims. (Cl. 92-15). A preheating and prebleaching process is used.

1,900,033. Apparatus for forming removable ice cream wrappers. Ray Anders, Indianapolis, Ind. Filed Apr. 22, 1931. 12 claims. (Cl. 93-36).

1,900,131. Rugous coating composition and process of making same. Frank B. Root, assignor to Chadeloid Chemical Company, New York, N. Y. Filed Nov. 20, 1929. 14 claims. (Cl. 91-68). A ground wood pulp of spray-projecting fineness is used.

1,900,162. Zinc meta-arsenite. Leo P. Curtin, assignor to Curtin-Howe Corporation, New York, N. Y. Filed June 21, 1930. 5 claims. (Cl. 92-21). Zinc meta-arsenite is precipitated with a plant fiber and shaped into wallboard.

1,900,166. Drier head. Lawton A. Dix, New York, N. Y. Filed May 10, 1930. 12 claims. (Cl. 34-4).

1,900,183. Slitting device. Robert McC. Johnstone, assignor to Cameron Machine Company, Brooklyn, N. Y. Filed Apr. 14, 1932. 7 claims. (Cl. 164-70).

1,900,239. Process of manufacturing SO_2 gas. Ingenuin Rechenbleikner, assignor to Chemical Construction Corporation, Charlotte, N. C. Filed Jan. 27, 1932. 15 claims. (Cl. 23-177). Acid sludge is treated with hot combustion gases.

1,900,253. Preparation of caustic liquor. Morris Blake Mount, Lynchburg, Va. Filed Nov. 11, 1930. 12 claims. (Cl. 23-185).

1,900,257. Method of making articles of paper. Benjamin F. Perkins, assignor to American Tissue Mills, Holyoke, Mass. Filed Oct. 1, 1931. 4 claims. (Cl. 154-2). Paper handkerchiefs.

1,900,294. Waxed paper and process of making the same. George N. Lovett, Holliston, Mass. Filed Nov. 4, 1929. 5 claims. (Cl. 91-67. 9). Embossed paper is coated with wax.

1,900,320. Method of recovering chemicals from waste liquors. Charles L. Wagner and Horace Freeman, assignors to J. O. Ross Engineering Corporation, New York, N. Y. Filed Mar. 7, 1928. 10 claims. (Cl. 23-48). Destructive distillation.

1,900,427. Manufacture of fibrous articles. Albert L. Clapp, Danvers, Mass. Filed Dec. 20, 1927. 5 claims. (Cl. 92-54).

1,900,506. Process of destructively distilling black liquor. Ralph W. Kumler, Wilmington, Del. Filed Nov. 7, 1930. 12 claims. (Cl. 202-3). Black liquor is mixed with hot black ash.

1,900,597. Roofing. Edward C. Otis, assignor to Certain-teed Products Corporation, New York, N. Y. Filed Apr. 28, 1926. 29 claims. (Cl. 91-68).

1,900,598. Roofing manufacture. Eugene T. Doyon, assignor to Certain-teed Products Corporation, New York, N. Y. Filed Nov. 23, 1923. 20 claims. (Cl. 91-68).

1,900,633. Apparatus for sorting transparent or translucent papers, film foils and the like. Carl Buchner, Mannheim-Waldhof, Germany, assignor of one-half to Papyrus A.-G., Mannheim-Waldhof, Germany. Filed Dec. 21, 1928. 1 claim. (Cl. 88-14). Method for illuminating the sheets.

1,900,660. Matrix board for stereotyping. Anton Rudolph Pawlitschko, assignor to Western Newspaper Union, a corporation of Delaware. Filed Oct. 13, 1930. 3 claims. (Cl. 91-68). Paper is impregnated with graphite and a resinous material.

1,900,698. Insulating body. George H. Ellis, assignor to Insulite Company, Minneapolis, Minn. Filed Aug. 10, 1929. 8 claims. (Cl. 92-21).

1,900,699. Waterproof insulating body. George H. Ellis, assignor to The Insulite Company, Minneapolis, Minn. Filed Nov. 15, 1929. 8 claims. (Cl. 92-21). Wood pulp and asphalt are used.

1,900,892. Box making machine. John W. Low, Mill Valley, Calif. Filed Dec. 3, 1930. 14 claims. (Cl. 93-51).

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1,900,940. Roofing and method of making same. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed Aug. 6, 1929. 8 claims. (Cl. 154-2).

1,900,967. Safety paper. Frank S. Wood, Quincy, Mass. Filed Apr. 22, 1931. (Cl. 91-67. 95). An alkaline paper is treated with a ferrocyanide.

1,901,024. Art of making plastic material. Jacob Edge, assignor to United States Gypsum Company, Wilmington, Del. Filed July 12, 1929. 9 claims. (Cl. 92-39). A carrying felt for use in board forming industry.

1,901,049. Process for the production of genuine watermark papers without using relief molds. Friederick von Heinrich, Budapest, Hungary, assignor of one-half to National Bank of Hungary. Filed Oct. 15, 1931. 2 claims. (Cl. 92-48).

1,901,080. Wiper mechanism for coating machines and process. Donald B. Bradner, assignor to The Champion Coated Paper Company, Hamilton, Ohio. Filed Feb. 5, 1932. 7 claims. (Cl. 91-43).

1,901,352. Machine for making composite sheets. Louis McCarthy, assignor to The Macallen Company, Boston, Mass. Filed Jan. 23, 1930. 3 claims. (Cl. 154-2.5).

1,901,378. Manufacture of paper board. Paul H. Rogers. Hartsville, S. C. Filed Sept. 2, 1931. 3 claims. (Cl. 92-3). Semi-chemical pulp and cotton fibers are used for a corrugating paper board.

1,901,382. Fibrous composition containing filler and binder substances and process of making them. Earl P. Stevenson, assignor to The Richardson Company, Lockland, Ohio. Filed Apr. 6, 1931. 20 claims. (Cl. 92-31).

1,901,425. Paper-marking machine. Harrison R. Williams, New York, N. Y. Filed Mar. 14, 1929. 3 claims. (Cl. 92-48). Metal rolls.

1,901,706. Production of pulp. Thomas Leonidas Dunbar, assignor to Chemipulp Process, incorporated, Watertown, N. Y. Filed Apr. 16, 1932. 12 claims. (Cl. 92-11). Step-wise digestion, using bisulphite and alkaline solutions.

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1,901,930. Distributing binder over fibrous materials. Ernest J. Pieper, Dillon F. Smith and Clarence C. Vogt, assignors to Armstrong Cork Company, Lancaster, Pa. Filed Aug. 2, 1930. 6 claims. (Cl. 92-21).

1,901,999. Insulating material and method of making the same. Charles A. Upson, assignor to The Upson Company, Lockport, N. Y. Filed Mar. 28, 1930. 22 claims. (Cl. 154-28).

1,902,106. Method of manufacturing paper pulp. Alfred M. Thomsen, San Francisco, Calif. Filed Dec. 11, 1928. 2 claims—(Cl. 92-9). Method of recovery of black liquor.

1,902,122. Method of forming waterproof tubing around firework fuse material. Joseph Gioiosa, Milton, Mass. Filed Aug. 19, 1931. 13 claims. (Cl. 154-1).

1,902,298. Roofing and building material. Henry C. Avery and Lester Kirschbraun, assignors to The Patent and Licensing Corporation, Boston, Mass. Filed Mar. 2, 1931. 5 claims. (Cl. 154-51).

1,902,312. Duplex roll of corrugated paper and method and means for making the same. Bernard Rous, Brooklyn, N. Y. Filed July 5, 1929. 7 claims. (Cl. 154-33).

1,902,461. Thermosetting resinous product and method of making the same. Emil E. Novotny, assignor to John Stogdell Stokes, Spring Valley Farms, Huntingdon Valley, Pa. Filed Sept. 6, 1930. 37 claims. (Cl. 92-21). A natural gum of plant origin is used in the paper.

1,902,539. Stencil. Carl Friedrich Brauer, Stettin, Germany. Filed Apr. 16, 1931. 10 claims. (Cl. 41-38.6).

1,902,604. Sheet severing mechanism. Otto R. Winter, assignor to The Upson Company, Lockport, N. Y. Filed Jan. 22, 1930. 6 claims. (Cl. 164-49).

1,902,713. Machine for pasting webs of paper together. Joseph A. Lowe, assignor to Falulah Paper Company, Fitchburg, Mass. Filed June 21, 1930. 18 claims. (Cl. 154-37).

1,902,798. Paper making apparatus. William H. Cape, assignor to S. D. Warren Company, Boston, Mass. Filed Apr. 28, 1931. 15 claims. (Cl. 92-44).

MARCH 28, 1933

1,902,872. Roofing. Leonard F. Loag, assignor to The Barrett Company, New York, N. Y. Filed Dec. 22, 1928. 5 claims. (Cl. 154-51).

1,902,916. Process for decomposing plant fiber material by cooking with phenolates. Otto Heinrich Strecker, assignor to The Firm Dr. Otto C. Strecker, Darmstadt, Germany. Filed June 7, 1930. 8 claims. (Cl. 92-9). Free phenol is present in addition to the alkali phenolates.

1,903,102. Fiber board manufacture and apparatus therefor. Francis S. Farley, assignor to Daniel Manson Sutherland, Jr., Morrisville, Pa. Filed Oct. 31, 1930. 10 claims. (Cl. 34-48). Method of drying, including skin drying before introduction into the multi-plate drier.

1,903,151. Apparatus for feeding pulp or fiber to paper making machinery. Arthur G. Wakeman, Appleton, Wis. Filed Apr. 23, 1932. 5 claims. (Cl. 92-46).

1,903,236. Paper manufacture. Bjarne Johnsen, assignor to Hammermill Paper Company, Erie, Pa. Filed Sept. 18, 1930. 6 claims. (Cl. 92-40). Size is added to paper stock during the travel of the latter on a fourdrinier wire.

1,903,243. Machine for making collapsed cartons. Frank Guy Peck, assignor to The Guardian Trust Company, Cleveland, Ohio. Filed Mar. 23, 1931. 8 claims. (Cl. 93-49).

Lake States TAPPI Discusses Motors

The regular monthly meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry was held on Tuesday, April 11, 1933 at the Conway Hotel, Appleton, Wisconsin. Chairman R. J. LeRoux presided. The last meeting is to be held sometime in May and will be of a purely social nature.

Splash-Proof Motors

The first paper of the evening was delivered by Mr. L. F. Keely, of the Louis Allis Company, Milwaukee, Wisconsin. The title of this paper was "Splash Proof Motors." Wherever sanitation demands that equipment be washed up with a hose, or where large quantities of water are used in the process motors must associate with water. Motors are not damaged by water providing that the water does not get into the windings, bearings, or commutators. The fact that ordinary types of motors are usually protected by means of an auxiliary sheet steel cover acknowledges their need of protection. The rather new splash-proof motor offers motor protection against splash water. Previous developments were designed for specific problems such as work in oil refineries, and dry cleaning establishments. The design of a splash proof motor would have been simple if it had not been limited to size and additional cost. The fundamentals of the design consist of specially designed and located baffles within the housing which do not destroy the natural ventilation which is necessary. The main baffle used in this design prevents any straight line flow of water particles into the motor. A second baffle, properly called "a secondary defense" is also included. The second baffle eliminates danger from the most violent splash to which the motor may be subjected. Protection against water getting into the bearings is also taken into consideration in the design, by introduction of a shaft guard which is merely an outer wall which breaks the force of the stream. The windings may be further protected by application of a special coating known as "Resistallis". The paper was supplemented by a series of excellent moving pictures of these motors in operation under most drastic conditions.

Rubber Covered Rolls

The second paper of the evening was entitled "Manufacture and Use of Rubber Coated Rolls." This paper was given by Mr. E. Peterson, manager of paper sales. B. F. Goodrich Company, Akron, Ohio. The paper, which was of an extemporaneous nature, consisted of a descriptive story of the two outstanding processes used in the covering of paper machine rolls. The Vulcalock process was described in full, being supplemented by a number of slides showing the steps in the coating and treatment of rubber coated rolls.

TAPPI and Superintendents to Meet

A large number of paper makers are expected to attend the joint meeting of the Delaware Valley Section of the Technical Association of the Pulp and Paper Industry and the Pennsylvania-New Jersey Division of the Superintendents Association at the Benjamin Franklin Hotel, Philadelphia, Pennsylvania, on Saturday, April 22, 1933.

Following is the program of the meeting: "Recent Developments in Size," by Rev. W. Kumler, Bennett, Inc. "Optical Characteristics of Paper," by E. S. Bissell, Bausch & Lomb Optical Co. "Rubber Rolls, Their Use and Abuse," by W. E. Brown. "The McDonnell Fourdrinier," by G. A. Peterson of Rice, Barton & Fales, Inc. "Paper as Viewed by the Engraver," by H. T. Sorenson. "Troubles of the Ink Maker with Paper," by J. F. Carey. "Coordination of Technical and Practical Men," by E. C. Gildenzopf of Schmidt & Ault Paper Company and G. E. Landt of Continental-Diamond Fibre Company.

The "Question Box," will be in charge of W. R. Maull of Dill & Collins, Inc. and J. L. Mullin, Jessup & Moore Paper Company. In the evening there will be a banquet in the Crystal Ball Room and Prof. A. J. Churchill will act as toastmaster. Dick Regan and his radio orchestra will supply the music and Roy H. Underdown will be song leader. C. W. Boyce, Secretary of the American Paper and Pulp Association, will speak, and Zack Wells will address those present.

Report Car Loadings Increase

Car loadings at The Miami Valley Coated Paper Company, Franklin, Ohio, have increased 5.20 per cent during the past 60 days—this is an increase of 6 per cent over the same period—February and March—last year—1932.

Stainless Steel Linings for Vessels Used in Chemical Processes*

By W. E. Jominy[1] and R. S. Archer[1]

Abstract

With the development of stainless steels has come a new field of application for steel, since, in addition to being stainless in the atmosphere, most of these steels are very resistant to the action of certain chemicals. Chemical processes which previously required the use of noble metals or which were carried out entirely in non-metallic vessels or metallic vessels with non-metallic linings may in many cases be carried out more economically in stainless steel vessels. The use of stainless steel often permits the use of higher temperatures and higher pressures, resulting in large economies.

While stainless steels are very much lower in cost than the noble metals, their cost is, nevertheless, rather high, ranging from 15 to 50 times that of ordinary plain carbon steel. It is with the idea of reducing this cost of equipment that various methods of lining plain carbon steel with a relatively thin sheet of stainless steel have been attempted.

Importance of Welds

Any method of lining plain carbon steel with stainless steel must depend upon welding for its success, and for this reason the A. O. Smith Laboratories became interested in this idea very early in the development of stainless steels. It will be remembered that early in the development of stainless steel many welding difficulties were encountered, and one need only refer to the scientific literature of five or more years ago to be convinced of these difficulties.

None of the high-chromium types of stainless steel may be hammer-welded by the usual method. Recent developments have made possible the welding of these steels to plain carbon steel by rolling, so that there is now obtainable a product which is composed of a layer of stainless steel welded to a layer of plain carbon steel. This product is available in the lighter gages. Such a product composed of a thickness of one quarter stainless steel and three-quarters carbon steel may be obtained for a cost of roughly 50 per cent of that of solid stainless steel of the same composition.

Attempts to arc weld the high-chromium stainless types of steel to similar steel or to carbon steel were made at our laboratories several years ago. It was soon found that bare wire welding could not be used in welding these materials, and that a new coating material to protect the arc-melted metal and to aid the welding was needed. After a great deal of experimental work a coating for stainless steel weldrods was developed. Welds made with these rods proved highly satisfactory from the point of view of strength and ductility. Not all compositions of stainless steel may be arc-welded, and certain compositions are more easily handled. The common type of 18 chromium and 8 nickel, and the 16 to 18 per cent chromium with no nickel alloys have been found to be easily welded by our process.

Corrosion tests using boiling concentrated nitric acid and the Strauss test were made on the arc welds produced and on the rolled metal of similar composition. In the early work it was found that these welds corroded faster than the parent rolled metal. This difficulty was rather carefully studied by making many tests with different compositions of stainless steel, several types of welding procedure and different subsequent heat treatments, and data have now been obtained which enable us to produce welds which are as resistant to corrosion as the parent materials. In fact, in some of these tests the arc-deposited metal was superior to the rolled parent metal.

Not only was there difficulty in obtaining weld metal which would resist corrosion as well as the parent metal, but also the parent metal adjacent to the weld was often made more easily corrodable. This effect in the parent metal is mainly due to the precipitation of chromium carbides at the grain boundaries caused by the heating of the metal during welding. The metallographic appearance of the metal so affected is shown in photomicrograph No. 1. The composition of this metal, is 0.13 per cent carbon, 19.8 per cent chromium, 8.95 per cent nickel,

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 13-16, 1933.
Contribution of the TAPPI Materials of Construction Committee.
[1] A. O. Smith Company, Wilwaukee, Wis.

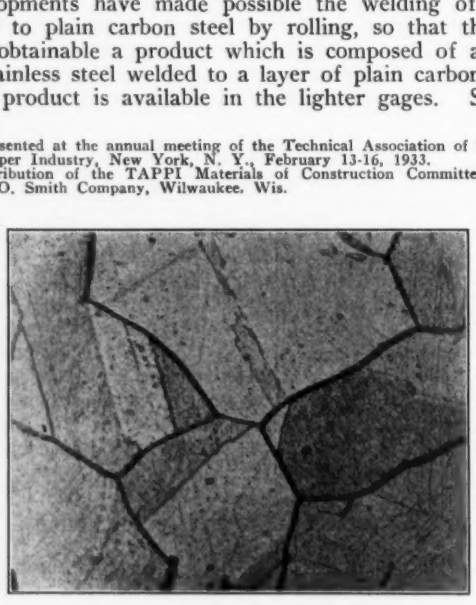


FIG. 1
1000X. Showing broadened grain boundaries produced by carbide precipitation.

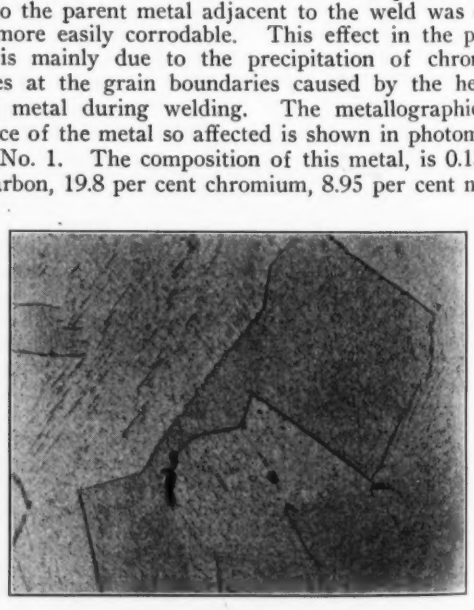


FIG. 2
1000X. Same metal as shown in Fig. 1 without broadened grain boundaries.

0.47 per cent manganese, 0.39 per cent silicon, 0.020 per cent phosphorus, and 0.012 per cent sulphur. The broadening of the grain boundaries shown in this photomicrograph has been produced by the deposition of carbides at the grain boundaries. The unaffected metal is shown in photomicrograph No. 2, whose appearance except for the grain boundaries is identical. The etching reagent used was alcoholic hydrochloric acid saturated with ferric chloride.

Since the decreased corrosion resistance is caused mainly by carbide precipitation, it is quite obvious that minimizing the carbon content will help to alleviate this effect. The steel mills have made good progress in producing low carbon steel of the 18 chromium-8 nickel type, so that it is now possible to purchase steel having 0.07 per cent carbon or less. When 18 chromium-8 nickel steel is used, we prefer the composition to be 0.07 per cent carbon or less. This is not possible to obtain commercially in the 20 chromium-10 nickel and 23 chromium-11 nickel varieties, but is not so necessary with these steels. The addition of certain other elements, such as titanium, very markedly decreases this tendency to corrode adjacent to the weld.

The band of affected metal adjacent to the weld may be eliminated by proper heat treatment if the design of the welded part will permit. The heat treatment consists in heating (for 18 chromium-8 nickel steel) to 1800-1850 deg. F., and cooling rather quickly. On thin sections an air blast usually provides sufficient rapidity of cooling. The usual stress-relieving treatment applied to welds is not sufficient to correct the carbide precipitation; in fact, for 18 chromium-8 nickel steel such a treatment would produce the undesirable carbide precipitation. By observing certain precautions during the welding operation, it is possible to minimize grain boundary carbide precipitation.

To show the metallographic appearance of one of our welds a series of photomicrographs is presented. In Fig. 3 is shown a macrograph of the weld and metal adjacent to the weld. After photographing the weld and adjacent metal, samples were cut from the specimen at points which are marked on the photograph. These samples were polished and photomicrographs prepared from them. One section cut from the weld and one from the parent metal was photographed in the unetched condition to show the cleanliness of the metal. These are shown in Figs. 4 and 5. It will be observed that the arc-deposited metal is sound and substantially as clean as the parent metal. The photomicrographs, Figs. 6, 7 and 8, of the weld metal after etching, taken of center, top and bottom of the weld show ver ylittle difference in

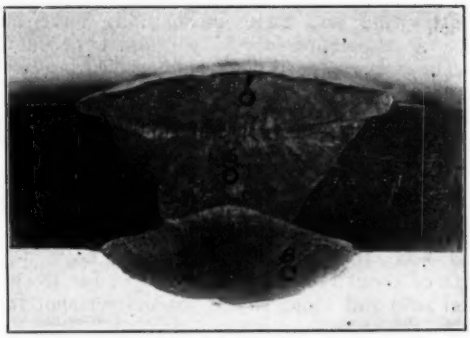


FIG. 3
3X. Macrograph of weld in 18 Chromium 8 Nickel Type Steel.

structure, which is uniform but somewhat columnar. Fig. 9, a photomicrograph taken at the junction of the weld and parent metal shows a good bond between these metals. The weld metal again shows columnar structure. Fig. 10 shows the structure of the parent metal. If the grain size in this photomicrograph is compared with that of the parent metal near the weld in Fig. 9, it will be observed that there is very little difference in grain size. This shows that the time at high temperature, due to welding, is so short that there is little time for grain growth and the parent metal is only slightly affected. The composition of this metal is 0.10 carbon, 17.45 chromium, 8.90 nickel, 0.39 manganese, 0.44 silicon, 0.006 phosphorus, and 0.016 surphur.

Lining Carbon Steel with Stainless Steel

Having perfected a means of arc welding and treating the various stainless alloys to minimize corrosion of the arc-deposited metal and adjacent metal and at the same time produce a strong ductile weld, the next step was to perfect a method of lining plain carbon steel with stainless steel.

Several methods have been tried, but only one has so far been used commercially. This method consists in spot welding a relatively thin sheet of stainless steel on a thicker carbon steel plate. The size of spot we have most commonly used has been approximately ⅝ inch in diameter, and the distance between spots from ¾ to 1½ inches from center to center. It is, of course, essential to have both the carbon steel and stainless steel clean and free from oxide if good welds are to be expected. Proper voltage and amperage control are also essential, but a fair latitude is permissible.

To test the strength of these spots tensile specimens

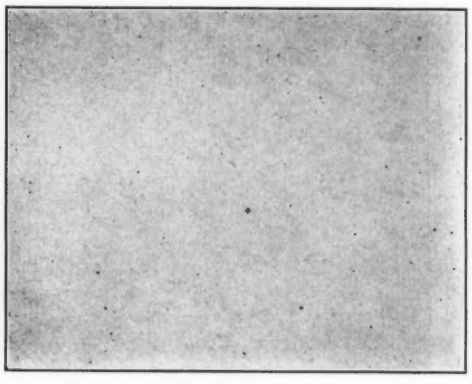


FIG. 4
100X. Weld deposit, unetched.

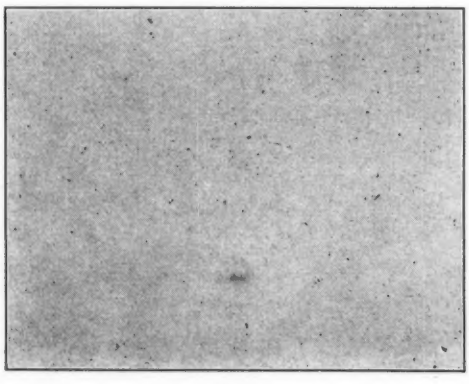


FIG. 5
100X. Parent metal, unetched.

one inch wide and eight inches long have been prepared. At the center of the bar and between the spots a saw cut is made, cutting through the carbon steel backing material, but not into the liner, as shown in Figs. 11 and 12. The bar is then placed in the tensile machine and pulled apart. Under these conditions failure usually occurs in the rolled stainless steel and not in the spots. In order to obtain failure through the spots it is necessary to use a wider specimen and have only one spot on each side of the slotted backing material. Tested in this way, the spots are found to have a shearing strength of about 11,000 pounds per spot for 18 chromium-8 nickel steel and about 15,000 pounds per spot for 18 per cent straight chromium composition.

An indication of the average quality of the bond may be had by mechanically working a lined plate. It is possible to roll and form these lined plates at forging temperatures, or at temperatures as low as 1000 deg. F. without breaking the bond between the stainless steel and the carbon plate.

Another question which was given serious thought was whether or not the lining might be torn loose by repeated heating and cooling when the 18 chromium-8 nickel variety of stainless steel was used as a liner, since the linear coefficient of thermal expansion of this steel

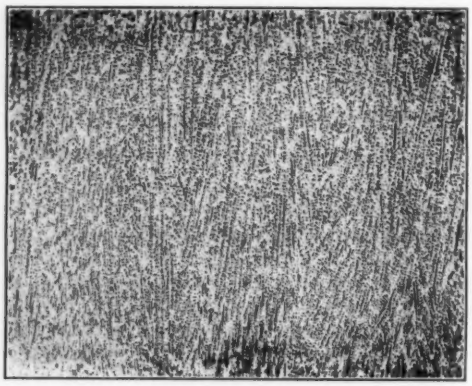


FIG. 6
100X. Weld deposit near center.

is about 1½ times that of plain carbon steel. A number of laboratory tests were made to answer this question. One of these tests consisted of lining a block of plain carbon steel 10 inches wide, 11 inches long, and 2 inches thick with a sheet of 18 chromium-8 nickel steel ⅛ inch thick, spacing the weld spots ¾ inch between centers. This lined block was then heated to 1,000 degrees F. in one-half hour, cooled to 200 deg. F. in ½ hour with steam and the cycles then repeated. The block withstood 485 cycles before one corner broke loose; however, on the last cycle the temperature was allowed to go to 1500 deg. F. before cooling.

FIG. 7
100X. Weld deposit, top bead.

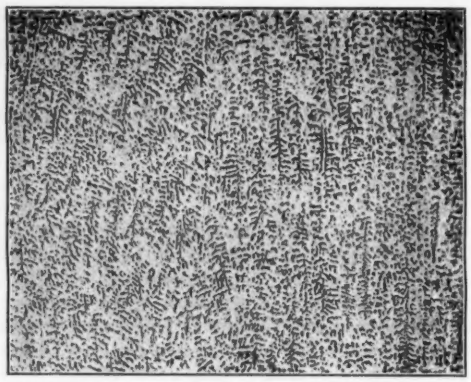


FIG. 8
100X. Weld deposit, bottom bead.

A further test to study the effect of heating and cooling on separation of the lining was made by building an experimental vessel 6 feet long, 42 inches inside diameter, and 1½ inches thick, lined with ⅛ inch 18 chromium-8 nickel stainless steel. This vessel was heated to 900-1100 deg. F. in 4 hours and cooled to 300 deg. F. in 4 hours by blowing steam into the inside. After nine such cycles, the vessel was examined and was found to

FIG. 9
100X. Junction of weld and parent metal.

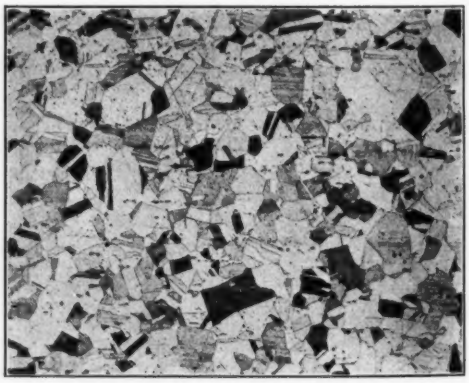


FIG. 10
100X. Parent metal away from weld.

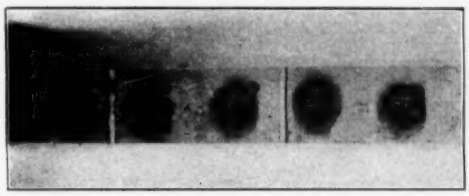


FIG. 11

1/2X. Test specimen used to determine strength of welded spots. (Top view.)

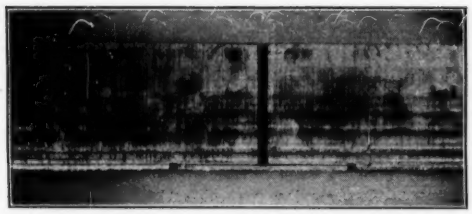


FIG. 12

1/2X. Test specimen used to determine strength of welded spots. (Side view.)

be in perfect condition. Having in mind the use of this method of construction in the oil industry, this vessel was then tested for corrosion resistance with dry hydrogen sulphide gas. The gas was introduced at 8 pounds per square inch pressure, and the vessel temperature then increased to 900-1000 deg. F. and held for 52 hours. The vessel was then cooled, the hydrogen sulphide removed, and the lining examined. It showed no attack.

Following these laboratory tests, a number of commercial vessels were made for use in the oil industry. One such vessel which is shown in Fig. 13 was built for the Standard Oil Company of Indiana. It was 8 feet in diameter, 38½ feet long, 4½ inches thick and weighed 249,200 pounds. Fig. 14 shows the inside of the head of this still so that the lining may be seen. This vessel has been in service for more than two years, and its performance is being carefully checked. To date, it has given entirely satisfactory performance, and there is no indication of failure anywhere.

An example of partial lining is found in a vessel recently lined with 16-18 per cent chromium steel. This vessel is 11 feet inside diameter, 72 feet 8 inches long, and 3 inches thick. It is lined only on the lower thirty-five feet where corrosion is the most severe.

Lined vessels, as well as many vessels of solid construction, have been built for the chemical industries for use in containing nitric acid and other chemicals. These also are giving satisfactory results.

Experiments with Sulphite Liquors

Although the corrosive conditions are more moderate in the oil stills or bubbling towers than in paper pulp digesters, it is felt that a metallic type of lining may be developed for use in paper pulp digesters. Certainly the temperature differential in the paper digester is much less than in the oil still whose operating temperature varies from atmospheric to 1000 deg. F. Having in mind the production of a lined vessel for paper pulp digesters, experiments were begun about two years ago employing our spotwelded type of lining and the various grades of stainless steel to determine whether certain steels applied in this way would successfully resist the corrosive action of sulphite liquor.

Laboratory tests were initiated to study the corrosive action of sulphite liquor on the steel, the welded spots, and the deposited weld metal with various kinds of stainless steel. An immediate difficulty occurred because it was attempted to make accelerated tests in order to obtain results in a few months. In order to have an accelerated test which would be truly representative of service conditions, we hesitated to increase the concentration of sulphurous acid or the temperature over that normally used, but sought to make longer cooks than those used in commercial operation. We found that practically all types of stainless steel were rather quickly attacked when subject to the corrosive action of calcium sulphite liquor made up to a concentration of 4 per cent free SO_2 using a temperature of 300 deg. F., and pressure of 75 pounds per square inch for a period of 24 hours. When the length of cook was decreased to 12 hours, using the same liquor concentration, pressure and temperature cycle, practically no attack occurred even after ten such cycles were completed.

An investigation was made of this rather peculiar difference in behavior toward corrosion, and it was found

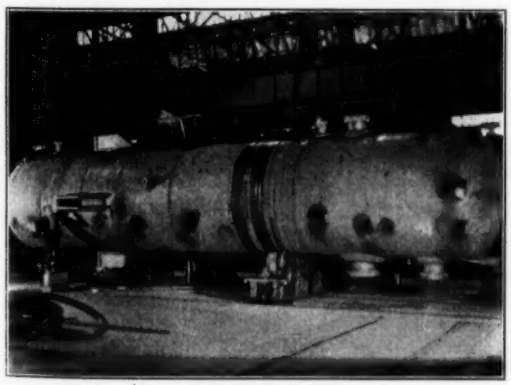


FIG. 13

A thick-walled pressure vessel which is completely lined with stainless steel.

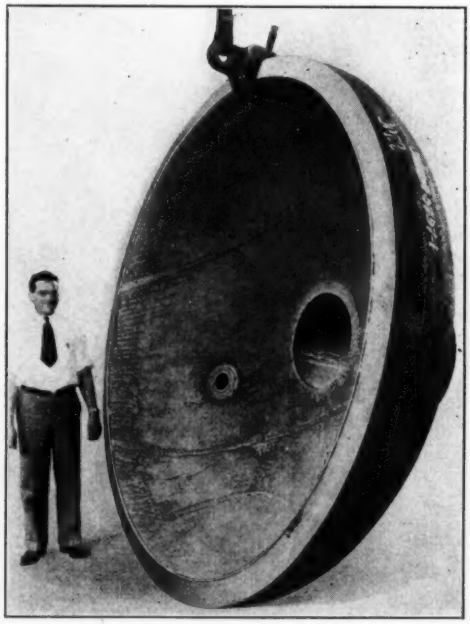


FIG. 14

Head of pressure vessel shown in Fig. 13. Note the stainless steel lining.

that the sulphite liquor after a twenty-four hour cook contained 3.70 per cent of sulphuric acid; whereas, the liquor which had been used in a twelve hour cook contained only 0.28 per cent sulphuric acid. Since it is well known that sulphuric acid attacks the 18 chromium-8 nickel and 18 per cent chromium no nickel types of stainless steel, it was at once apparent that the formation of the relatively large quantity of sulphuric acid was responsible for the attack of the stainless steels when the cook was continued for twenty-four hours.

Another question which was raised at this time was whether the stainless steel might catalyze the change to sulphuric acid and consequently could never be used in connection with the sulphite digester. Accordingly, a test run was made using identical conditions, but using enameled autoclaves and being careful that the liquor would not come in contact with any metal. After a twelve hour and twenty-four hour cook were made under these conditions, the liquor was examined for sulphuric acid content. The liquor subjected to a twelve hour cook contained 0.37 per cent sulphuric acid, and that subjected to a twenty-four hour cook contained 2.54 per cent sulphuric acid. This test indicated that the metal itself was not responsible for the formation of sulphuric acid.

Tests at Institute of Paper Chemistry

About the same time these tests were in progress, several small autoclaves having a capacity of about six liters were made from the different stainless steels with different treatments and given to the Institute of Paper Chemistry at Appleton, Wis., for test as to resistance to corrosion in the sulphite cooking process. A series of long cooks was made in these digesters and they were returned to us for examination. It was found that each of the steels had been attacked probably again due to the long continuous cooks during which sulphuric acid was generated. These were cleaned up and returned to the Institute to be used for normal cooks. After a year's use, they were reported as giving very satisfactory service and showing practically no additional corrosion.

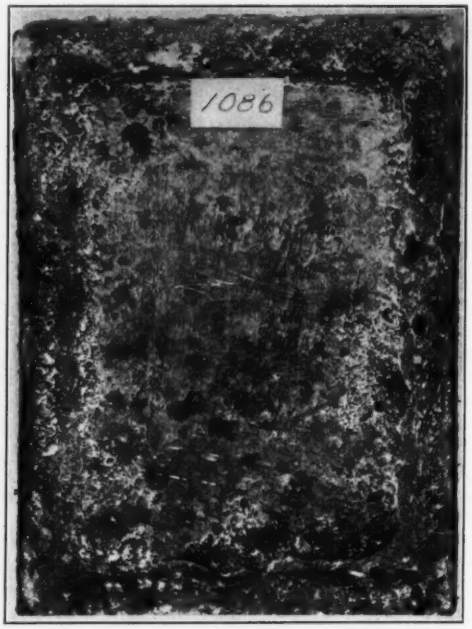


FIG. 16
This shows adherent deposit on surface of specimen No. 1086 after 11-months exposure in pulp digester.

Since no accelerative corrosion test could be devised, it was decided to make a series of spot-welded specimens to be hung in commercial digesters, and with the cooperation of a number of sulphite mills, this was accomplished. Specimens were made up by spot welding a 7/64-inch thick liner on a 1 inch thick carbon steel block. In order to protect the carbon steel base metal from the sulphite liquor, the blocks were welded into boxes made of stainless steel of the same composition as the liner.

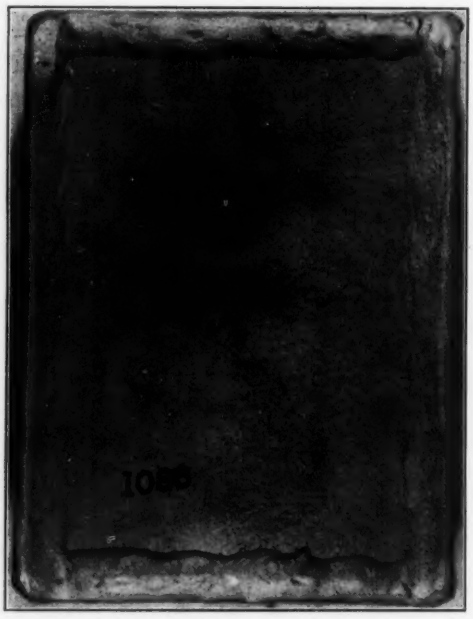


FIG. 15
Surface appearance of specimen No. 1086 before placing in commercial pulp digester.

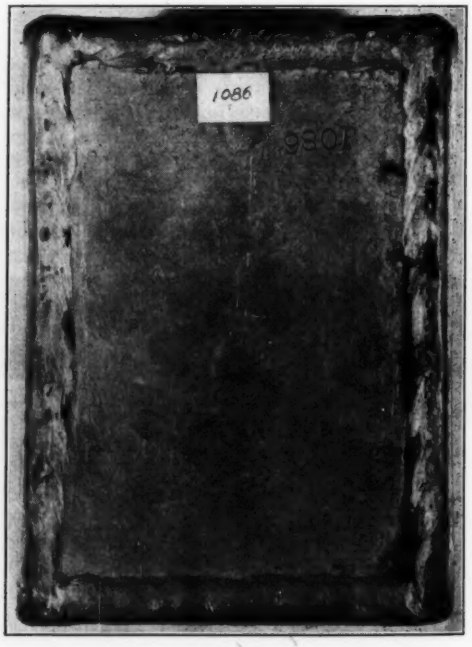


FIG. 17
This shows surface appearance of specimen No. 1086 after removing adherent deposit.

There were twenty-one specimens made up, each four inches wide and six inches long and equipped with clamps and connections for hanging in the digesters. These specimens were made up with five different types of stainless steels, some were formed hot, some formed cold and some not formed at all. The forming was done after the lining was spotwelded to the carbon back and consisted in bending the six-inch dimension over a ten-inch radius. After forming, some of the specimens were heat treated. Fourteen of these specimens were hung in the digesters of one large paper mill, three were hung in the digesters of another mill, two at a third paper company, and two more at a fourth paper mill. These mills will be designated in this paper as Mills A, B, C, and D, respectively.

Before taking the specimens to the several paper mills, each specimen was photographed to give an enlarged picture about 1½ times actual size, of the specimen. In hanging the specimen in the digester, care was taken to insulate the metal specimens from the metal parts to which they were fastened, in order to eliminate electrolytic action. All samples were so located in the digesters that they were at all times immersed in the liquor with the exception of the specimens at paper mill B. Here they were so located that they were immersed in liquor during five hours of the run and in gas during four and one-half hours of the run. The samples were allowed to remain in the digesters for from nine to eleven months except in one or two instances when they fell into the bottom of the digester because of corrosion of the clamp bolts, which were an inferior quality of stainless steel.

When the samples were removed from the digesters, they were all covered with an adherent deposit. Those from mill D had the thinnest deposit, and those from mills B and C had very thick adherent deposits. The specimens were all first photographed, then soaked for about a month in a boiling solution of sodium carbonate. Some of the specimens were cleaned by this process. The remainder were placed in hot, concentrated nitric acid for a few hours, and the deposit was entirely removed by this means. After the deposit was removed, they were again photographed, and the surface very carefully examined. They were then rated as to their relative resistance to corrosion, giving greatest weight to the surface appearance and amount of pitting. In rating the corrosion resistance, the four least corroded specimens were designated as No. 1, the next four least corroded, No. 2, and so on. In no case were the 7/64-inch liners corroded through; in fact, only the 16 per cent chromium-no nickel liners were badly corroded.

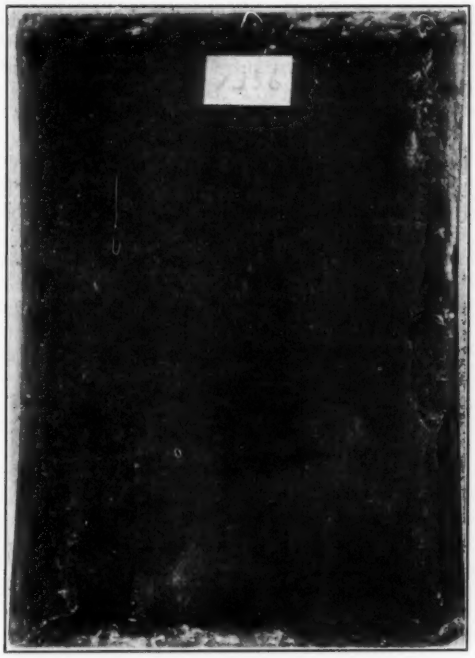


FIG. 19
This shows adherent deposit on surface of specimen No. 1356 after 11-months exposure in pulp digester.

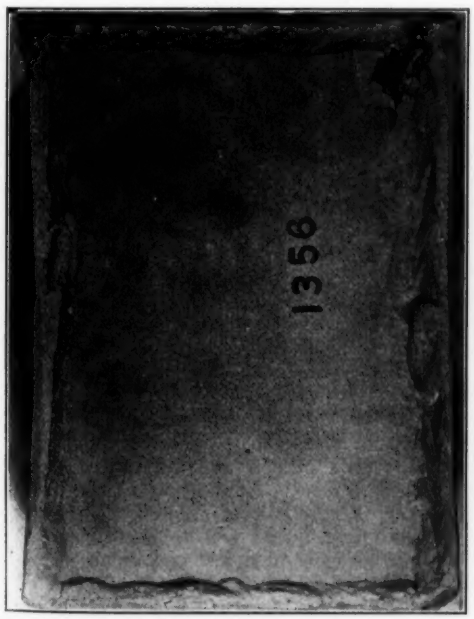


FIG. 18
This shows surface appearance of specimen No. 1356 before placing in commercial pulp digester.

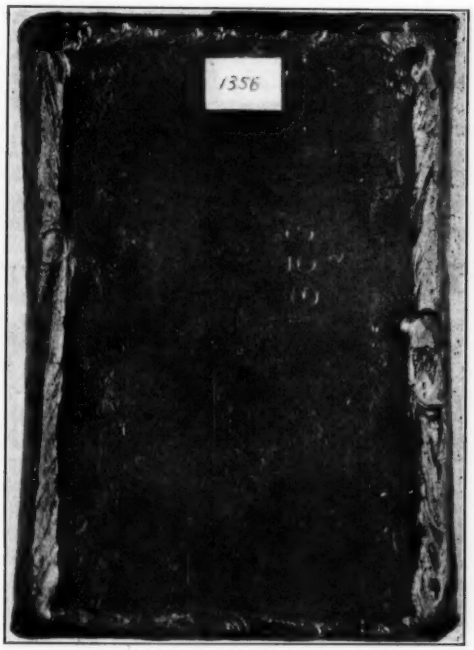


FIG. 20
This shows surface appearance of specimen No. 1356 after removing adherent deposit.

In Table I are listed the nickel, chromium, and carbon contents of the linings, the forming operations, the heat treatments, the time of exposure in the digesters, and the relative degree of corrosion resistance, No. 1 indicating the least corroded, and No. 6 the most corroded of the twenty-one specimens. The specimens are grouped according to their compositions. If this table is studied, it will be observed that the heat treatments in which the sample is air-cooled or furnace-cooled do not produce as satisfactory condition for corrosion resistance as exists in the corresponding untreated sample. This is probably because the heat treatment was carried out after the lining was attached to the carbon steel back and the air-cooling was too slow to produce complete retention of austenite and to prevent the precipitation of carbides. The single specimen (No. 3123) that was water quenched from 1800 deg. F. had excellent corrosion resistant properties. It will be observed that the steels belonging to the 23 chromium-11 nickel group are the best for corrosion resistance. Next to this comes the steel in the 20 chromium-10 nickel group, then the 18 chromium-8 nickel low carbon followed by the same composition with higher carbon. The poorest is the plain 16 per cent chromium steel.

Averaging the corrosion resistance numbers of each of these steels, including all the heat-treated samples, we find that the specimens with the 23 chromium-11 nickel type of liners have an average corrosion resistance of 2.2, the 20 chromium-10 nickel liners have an average of 2.5, the 18 chromium-8 nickel low carbon liners have an average of 3.3, the higher carbon 18 chromium-8 nickel liners have an average of 4, and the plain 16 per cent chromium liners have an average of 6. As already stated, these figures are the averages of ratings given the specimens, the lowest number indicating the least corrosion.

To give an idea of the appearance of these specimens, Figs. 15 to 20 of specimens Nos. 1086 and 1356 are presented here, showing the appearance before exposure, as removed from the digester showing the deposit, and after removal of the deposit showing the corroded liner surface.

TABLE I

CORROSION OF SAMPLES HUNG IN PAPER DIGESTERS

Sample Number	Per cent C	Per cent Ni	Per cent Cr	Mechanical Work	Heat Treatment	Where Tested	Time Exposed Months	Relative Corrosion Resistance *
1087	.08	0.17	16.62	Bent Cold	None	Mill A	11	6
1088	.08	0.17	16.62	Bent Cold	1200° F.—2 Hrs. Furnace Cooled	Mill A	11	6
Average Corrosion Resistance								6
1081	.18	8.74	19.23	Bent Cold	None	Mill A	11	5
1082	.18	8.74	19.23	Bent Cold	None	Mill B	6	3
Average Corrosion Resistance								4
1083	.07	7.78	18.67	Bent Cold	None	Mill A	11	4
1084	.07	7.78	18.67	Bent Cold	None	Mill B	8	2
1142	.07	7.78	18.67	Bent Hot	1800—2 Hrs. Air Cooled	Mill A	11	5
1143	.07	7.78	18.67	Flat	None	Mill A	11	3
1356	.07	7.78	18.67	Bent Cold	None	Mill D	11	2
1357	.07	7.78	18.67	Bent Cold	1800—2 Hrs. Air Cooled	Mill C	10	4
Average Corrosion Resistance								3.3
1085	.05	10.75	20.26	Bent Cold	None	Mill A	11	3
1086	.05	10.75	20.26	Bent Cold	None	Mill B	11	1
1144	.05	10.75	20.26	Bent Hot	1800—2 Hrs. Air Cooled	Mill A	11	5
1145	.05	10.75	20.26	Flat	None	Mill A	11	2
1358	.05	10.75	20.26	Bent Cold	None	Mill D	11	1
1359	.05	10.75	20.26	Bent Cold	1800—2 Hrs. Air Cooled	Mill C	11	3
Average Corrosion Resistance								2.5
3120	.16	11.75	22.92	Flat	None	Mill A	9	3
3121	.16	11.75	22.92	Bent Cold	None	Mill A	9	2
3122	.16	11.75	22.92	Bent Hot	1800—2 Hrs. Air Cooled	Mill A	9	4
3123	.16	11.75	22.92	Bent Hot	1800—2 Hrs. Water Cooled	Mill A	9	1
3303	.16	11.75	22.92	Flat	None	Mill A	9	1
Average Corrosion Resistance								2.3

* Number 1 is least corroded

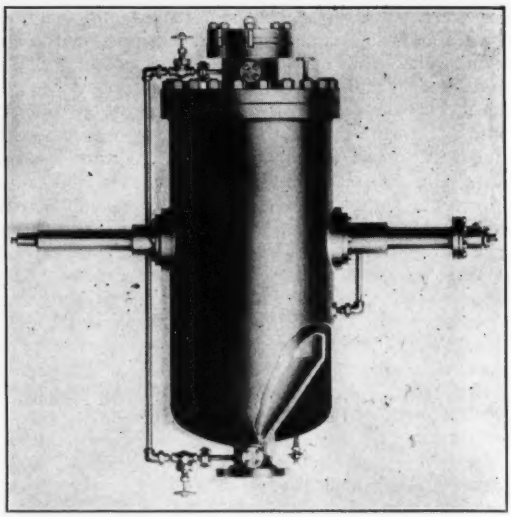


FIG. 21

This shows construction of U. S. Forest Products Laboratory digester, jacketed for steam heating.

Digesters at Forest Products Laboratory

In addition to these investigations of the corrosion resistance of our lined material, three small lined digesters have been built for large-scale laboratory operations. These digesters were made for the U. S. Forest Products Laboratory at Madison, Wis., the Northern Paper Mills at Green Bay, Wisconsin, and the Institute of Paper Chemistry at Appleton, Wis. Fig. 21 shows the construction of the U. S. Forest Products Laboratory digester. The digesters for the Forest Products Laboratory and Institute of Paper Chemistry are 24 inches inside diameter and about 6 feet long; the one at Northern Paper Mills is slightly smaller. All three are made from 5/8-inch thick plain carbon steel lining. The digesters at the Forest Products Laboratory and Institute of Paper Chemistry are lined with 23 chromium-11 nickel type of stainless steel; whereas, the one at Northern Paper Mills is lined with 18 chromium-8 nickel low carbon type of stainless steel. All three of these digesters have been in use for more than a year, and no difficulty has so far been reported from their use, except that a few leaks developed in the heads of two of the digesters, due to improper design. These heads were made of solid stainless steel, and the leaks occurred mainly in the solid stainless steel and the arc welds joining the stainless steel to the lined portion of the digester. These heads were replaced with lined heads and the difficulty seems to be overcome.

The digester at the Forest Products Laboratory has had more continuous use than the others. Periodic examinations have been made of this digester to find any difficulties that might arise. At the time of the first inspection after about three cooks of 10 hours each, a number of very fine hair line checks were observed in the lining, and for a time we were at a loss to explain their origin, since this condition was not observed on any previous vessel or on the samples hung in the commercial digesters. It was found, however, that cold water is sprayed onto the lining directly after the cook to wash the digester while the carbon steel backing is still very hot, and we believe

the very severe contraction of the liner caused by the application of this cold water was an important factor in the formation of these checks. A tightly adherent deposit, found upon analysis to be mainly calcium sulphate, was on the walls of the digester at the time of the first inspection and appears to have become somewhat thicker in the course of continued use. It appears as though this tightly adhering deposit acts like at least a partial protection against corrosion. The deposit has been scraped off in spots from time to time to examine the surface closely for signs of corrosion. There was practically no indication of corrosion on the lining of this digester at the last inspection, which was made about one year after the digester was first put into service.

Metal vs. Ceramic Linings

While some difficulties have been encountered with stainless lining, they should be very small compared with the difficulties with the present ceramic linings, since the characteristics of stainless steel certainly are much closer to those of the carbon steel backing than any ceramic material. The ceramic lining, as is well known, requires constant vigilance and continuous repairing to keep it in shape, and entails occasional shut-downs.

Economically, the metallic lining should also have advantages. The annual charges for the ceramic lining average about $1500 per digester. This figure is based on an average cost of lining of $6000 per digester of 12½ tons capacity, having an average life of 7 years, and includes a maintenance cost of $460 per year. This maintenance figure represents the average maintenance cost for eight digesters in a mill where the records are carefully checked.

Our studies have indicated that the annual charge on a metallic lining would be appreciably less than $1500. In addition, a digester of the same outside dimensions would have increased capacity, due to increased inside diameter and elimination of shut-downs for lining repair. The increase in inside diameter alone, due to the substitution of metallic for ceramic lining, would result in about 14 per cent increase in capacity. Also, the possibility of pieces of brick or grit in the pulp causing wear of the rolls and machinery is eliminated.

This research in the development of a satisfactory metallic lining for paper pulp digesters is still in progress. It has reached a stage where trial of larger units is logical, and the future development will require close cooperation with the paper industry. Metallic linings are working out satisfactorily in the oil industry and are gaining headway in the chemical industry. With further development they should be advantageous to the paper industry.

Physical Tests for Paper Sub-Committee Report*

At the 1932 annual meeting of TAPPI a sub-committee of the Paper Testing Committee was formed with the object of improving the existing TAPPI methods for the physical testing of paper, securing, if at all possible, the cooperation of equivalent committees in other countries or of representative men there, so as to draft the new specifications in such a form and character as to be most likely acceptable to all concerned.

The object is not so much to provide more suitable routine testing methods but to provide if possible for each test an authoritative, precise and unambiguous procedure which could serve as an international standard. Such methods could not only be referred to, if necessary, in contracts or specifications for the purchase of paper or pulp; but which is more important, they could also be considered as standard reference methods to which any procedure or apparatus in use for a given test could be compared, and if desired, co-relating test factors determined. The adoption of such methods certainly does not imply that apparatus or methods in common use which are not strictly comparable, should be discarded. On the contrary it would enable those favoring the use of any procedure or instrument to continue with confidence if standard conversion factors were obtained either by themselves or by others suitably equipped.

A great deal of interest in the subject has been shown in a number of countries during the past few years and several valid criticisms have been levelled at some of the existing standard methods. Owing perhaps to inherent faults or omissions in the present specifications, they have not been as completely adopted as might be desired even in the country of their origin. There is also some danger that without adequate cooperation, series of different national standard methods will be evolved which, while probably not differing seriously in essentials, will nevertheless be sufficiently at variance to serve to unnecessarily confuse international communications and literature. It would also seem to require the weight of authority, which probably only an international acceptance can give, to secure complete uniformity in any country, as with the authority or longevity of official methods often in question, each country has instances where some leading technicians and laboratories prefer to ignore their existence and issue test results incomprehensible except in comparison with others of their own. Moreover, there is also the inestimable value to the tests themselves which an international discussion and formulation would ensure.

The task outlined is clearly of no little magnitude and in order to make some definite progress it has been suggested that as a first step only the following tests be actively considered in the meantime: Sampling, conditioning, basis weight, thickness, burst, tear, tensile strength, stretch or percentage elongation and folding.

In considering the existing volume of Paper Testing Methods, published by TAPPI, the following suggestions have been circulated to committee members as a basis for discussions.

1. Sampling

Certain pertinent criticisms have lately been offered to the effect that with modern cutters and layboys a better sample would be obtained by taking a number of successive sheets from a flat package and in order to be practicable with large cases. the sample should be taken at a

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 13-16, 1933.

point near the top or bottom only. The instructions for the number of samples to be taken especially in view of the suggested changes seem to require modification, and it has been proposed to divide up each shipment into "units" which may consist if necessary of fractions of packages, and sample each according to a stated procedure so as to obtain a fair sample from the whole.

Replies to date indicate general agreement with the above. However for fine papers which are usually cut from single rolls, the existing procedure would be preferable.

2. Conditioning

The standard of 65 per cent relative humidity at 70 deg. F. has already received more or less complete acceptance and a recent TAPPI questionnaire shows that despite suggestions for a 50 per cent relative humidity basis, the majority favor the present standard basis. It is suggested that ± 2 per cent relative humidity and ± 5 deg. C. tolerance is unnecessarily wide for precision work and it also seems desirable to state whether the samples were dried or moistened to the stated humidity conditions.

Replies to date indicate that a tolerance of ± 2 per cent r. h. is not unreasonable, in view of difficulties of measurement and control, and that ± 5 deg. F. or less would be preferable. The importance of the hysteresis effect is questioned and also the desirability of 65 per cent as against 50 per cent r. h.

3. Substance

It is suggested that for standard purposes the substance in grams per square meter be stated and in addition if desirable, the accepted local trade substance for the particular paper in question.

Replies to date indicate agreement.

4. Thickness

The permissible range of diameter and pressure of the micrometer jaws (9.7—16 mm. and 709—1418 grams) seems entirely too broad for very soft papers allowing as it does, a five fold pressure variation. It is suggested that a pressure of 1 kilogram per square centimeter be specified as standard and a plunger area of say 1 square centimeter, with a statement of the probable effect of varying this area between say 0.75 to 2 square centimeters, which with smooth papers would be quite small. It perhaps would be an improvement to specify that the thickness of 5 to 10 sheets of paper should be measured together with wire sides in the same direction and the average result divided by the number of sheets used.

Replies to date indicate considerable difference of opinion as to "thickness" being the same property as "bulk" or whether the existing test is used primarily to determine variations of caliper either of different sheets or of parts of a single sheet. The consensus is that the question is difficult and several suggest that a pressure of ½ kg. per square centimeter would be preferable. Perhaps three separate tests should be specified to cover the three separate properties mentioned.

5. Burst

It is suggested that the upper aperture in a bursting tester should be specified 1.20 inches diameter with a 0.025 inch radius and that attention be paid to the elasticity and position of the diaphragm. It also seems most desirable to specify a uniform rate of loading to the sample with a minimum time of say 1.5 seconds as against the sharply accelerated rate as at present.[1]

Replies to date indicate agreement with the necessity of providing a uniform rate of loading for a standard test.

6. Tear

The two instruments in common use, the Thwing Elmendorf and the Marx Elmendorf, are somewhat different in their results owing to different amounts of work being done in bending the samples during the test. For standard purposes this should be cleared up and improved means of calibrating the instruments might be stated[2]. It is also suggested that the manner in which the samples are torn, that is whether the tearing force is applied toward the felt side or the wire side, makes some difference. This probably should be taken into account in the specifications.

Replies to date indicate unanimous agreement. Some minor modifications are suggested.

7. Tensile Strength

The size of specimen sizes mentioned, 12.7-25.4 wide and "not less than 140 mm. long," is unduly large. It is suggested that the standard be 180 mm. long and 15 mm. wide as the variations in the specimen sizes appreciably affect results. The speed of the stressing jaw has an effective meaning only if the effective weight of the pendulum is also specified. It accordingly may be desirable to specify the rate of loading which for convenience should bear a relation to the ultimate tensile strength.

Replies to date indicate general agreement for necessity of specifying the rate of loading in a more satisfactory manner and also a 15 mm. wide strip. Some favor 100 mm. for the effective length of the strip as being often more convenient to secure.

8. Stretch

There is no official TAPPI method for this property. The matter is complicated by the necessity for considering the effect of the natural cockle or waviness of the sheet which otherwise is included in varying degrees to figures usually given. It is suggested that an initial load of say 1 kg. be given a strip of paper 15 mm. wide and 180 mm. long and the percentage elongation measured from the length under these conditions to the length at rupture.

Replies to date indicate general agreement, with emphasis placed on the necessity of accurately specifying the rate of loading of the strip. A suggestion is made to determine the stretch-strain modulus as an additional test.

9. Folding

The status of this important test is somewhat unsatisfactory at present and considerable work probably needs to be done to simplify and standardize it.

Replies to date indicate the inadequacy of present methods and apparatus. It is suggested that instructions should be added for the present method for the Schopper folder to measure the friction of the rollers and their alignment, which is considered more important than spring tension. It is known that promising apparatus is being actively considered by at least one manufacturer and it is hoped that a better instrument will ultimately become available.

International Cooperation

Replies received, not only from American members of the subcommittee but also from those abroad have been very encouraging and it is hoped during the coming year, that at least for some of the tests, satisfactory specifications will be agreed and submitted to the main committee. Opinions on the enumerated tests by any member of the Technical Association would be most welcome.

JAMES D'A. CLARK, Chairman,
Scott Paper Company, Chester, Pa.

[1] Tech. Assn. Papers, XV, 367 (1932)

[2] Tech. Assn. Papers, XV, 262 (1932)

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING APRIL 15, 1933

CIGARETTE PAPER

Champagne Paper Corp., Schodack, Havre, 396 cs.; Champagne Paper Corp., Manhattan, Havre, 874 cs.; De Manduit Paper Corp., Manhattan, Havre, 257 cs.; Standard Products Corp., Paris, Havre, 34 cs.; Max Speigel & Sons, New York, Hamburg, 4 cs.

WALL PAPER

F. J. Emmerich, New York, Hamburg, 1 cs., 1 ble.; ——, New York, Hamburg, 5 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., American Trader, London, 2 bls., 1 cs.

NEWS PRINT

Jay Madden Corp., Berlin, Bremen, 426 rolls; Jay Madden Corp., Scanyork, Hango, 461 rolls; Gilman Paper Co., Scanyork, Hango, 141 rolls; ——, Scanyork, Hango, 296 rolls; Parsons & Whittemore, Inc., Scanyork, Stockholm, 132 rolls; Perkins Goodwin & Co. Manhattan, Hamburg, 312 rolls; Parsons & Whittemore, Inc., New York, Hamburg, 110 rolls; ——, New York, Hamburg, 30 rolls.

PRINTING PAPER

Int'l. Forwarding Co., Statendam, Rotterdam, 51 cs.; American Shipping Co., Berlin, Bremen, 2 cs.; ——, Scanyork, Hango, 28 bls., 62 rolls; E. Dietzgen & Co., New York, Hamburg, 4 cs.; Phoenix Shipping Co., New York, Hamburg, 3 cs.

WRAPPING PAPER

Gevaert Co. of America, Black Gull, Antwerp, 14 cs.; D. E. Bordner, New York, Hamburg, 2 cs.

FILTER PAPER

H. Reeve Angel & Co. Inc., American Trader, London, 7 cs.; H. Reeve Angel & Co. Inc., Majestic, Southampton, 4 cs.; J. Manheimer, Majestic, Southampton, 147 bls.

FILTER MASS

P. H. Petry & Co., Manhattan, Hamburg, 100 bls.; Atlantic Forwarding Co., New York, Hamburg, 20 bls.

FILTER PULP

Felix Spitzner, New York, Hamburg, 20 bls.

DRAWING PAPER

H. Reeve Angel & Co., Inc., American Trader, London, 4 cs.

TISSUE PAPER

——, Pr. Adams, Marseilles, 7 cs.; B. F. Drakenfeld & Co., Antonia, Liverpool, 2 cs.

PARCHMENT PAPER

Phoenix Shipping Co., New York, Hamburg, 4 bls.

DECALCOMANIA PAPER

Sellers Transportation Co., New York, Hamburg, 6 cs.

TRANSFER PAPER

Rohner Gehrig & Co., Bremen, Bremen, 6 cs.

SURFACE COATED PAPER

Globe Shipping Co., Berlin, Bremen, 25 cs.; P. Puttmann, Black Gull, Antwerp, 5 cs.; Gevaert Co. of America, Black Gull, Antwerp, 14 cs.; Phoenix Shipping Co., Manhattan, Hamburg, 4 cs.; Globe Shipping Co., Bremen, Bremen, 4 cs.; Globe Shipping Co., New York, Hamburg, 1 cs.

METAL COATED PAPER

W. G. Young & Co., Berlin, Bremen, 3 cs.; Hensel Bruckman & Lorbacher, Berlin, Bremen, 9 cs.; K. Pauli Co., New York, Hamburg, 37 cs.

PHOTO PAPER

J. J. Gavin, Majestic, Southampton, 5 cs.

COVER PAPER

Int'l Forwarding Co., New York, Hamburg, 2 cs.

DESIGN PAPER

Wilkesbarre Lace Manfg Co., Antonia, Liverpool, 1 cs.

COLORED PAPER

American Express Co., Bremen, Bremen, 1 cs., 5 bls.

CORN HUSK PAPER

——, Black Gull, Antwerp, 4 cs.

PAPER BAGS

J. B. Mast & Co., Black Gull, Antwerp, 6 cs.

CARBON PAPER

Globe Shipping Co., Statendam, Rotterdam, 3 cs.

IVORY BOARDS

R. Wilson Paper Corp., Statendam, Rotterdam, 26 cs.

CARD BOARD

National City Bank, Paris, Havre, 5 cs.

PASTE BOARD

J. Dunn Sons & Co., New York, Hamburg, 51 cs.

MISCELLANEOUS PAPER

Steiner Paper Corp., Statendam, Rotterdam, 22 cs., The Borregaard Co. Inc., Gripsholm, Gothenburg, 48 bls., 394 rolls; E. H. Sargent & Co., Gripsholm, Gothenburg, 4 cs.; G. G. Steiner, Paris, Havre, 20 cs.; Keuffel & Esser Co., Manhattan, Hamburg, 32 cs.; Wedeman Godknecht & Lally, New York, Hamburg, 8 cs.; C. Schleicher & Schull Co., New York, Hamburg, 2 bls., 1 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co. Inc., Berlin, ——, 53 bls. rags; E. J. Keller Co. Inc., Black Gull, ——, 95 bls. bagging; E. J. Keller Co. Inc., Artigas, ——, 47 bls. rags; ——, American Trader, London, 57 bls. rags; Chase National Bank, American Trader, London, 21 bls. felt waste; Castle & Overton, Inc., Western World, B. Aires, 97 bls. hessian scrap, Castle & Overton, Inc., Western World, B. Aires, 21 bls. new cuttings.

OLD ROPE

National City Bank, Sea Victory, Bristol, 84 coils; Banco Coml Italiane Trust Co., American Trader, London, 54 coils.

CHINA CLAY

Orbis Products Trading Co., Antonia, Liverpool, 120 bags.

GLUE STOCK

——, Manhattan, Hamburg, 300 bags bone glue; ——, New York, Hamburg, 200 bags bone glue.

WOOD PULP BOARDS

Lagerloef Trading Co., Manhattan, Hamburg, 299 bls., 60 tons.

WOOD PULP

Castle & Overton, Inc., Statendam, Rotterdam, 950 bls. wood pulp; J. Manheimer, Statendam, Rotterdam, 50 bls. wood pulp; E. J. Keller Co., Inc., Berlin, ——, 672 bls. wood pulp; J. Andersen & Co., Gripsholm, Gothenburg, 500 bls. sulphite; Johaneson Wales & Sparre, Inc., Gripsholm, Gothenburg, 337 bls. sulphite, 400 bls. chemical pulp; Perkins Goodwin & Co., Gripsholm, Gothenburg, 508 bls. kraft pulp; E. M. Sergeant & Co., Gripsholm, Gothenburg, 897 bls. kraft soda pulp, 80 bls. sulphite; ——, Scanyork, Stockholm, 825 bls. sulphate 167 tons; Stora Kopparberg Corp., Scanyork, Stockholm, 500 bls. chemical pulp, 101 tons; Castle & Overton, Inc., Scanyork, Hango, 3834 bls. sulphite, 766 tons; Bulkley Dunton & Co., Black Eagle, ——, 125 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING APRIL 15, 1933

Congoleum Nairn Co., Schodack, Havre, 596 bls. rags; ——, Schodack, Havre, 16 cs. printing paper.

NORFOLK IMPORTS

WEEK ENDING APRIL 15, 1933

——, Schodack, Dunkirk, 174 bls. bagging; National City Bank, Artigas, Manchester, 34 bls. rags; E. L. Keller Co. Inc., Artigas, Manchester, 47 bls. new cuttings.

BOSTON IMPORTS

WEEK ENDING APRIL 15, 1933

E. Butterworth & Co. Inc., Black Gull, Antwerp, 108 bls. bagging; Atkinson Haserick & Co., Pr. Adams, Genoa, 3 cs. wrapping paper; Irving Trust Co., Artigas, Manchester, 54 bls. bagging; Atterbury Bros. Inc., Coldbrook B. Aires, 417 bags casein, 55,162 lbs.

G. S. Witham, Jr., Sells Patents

G. S. Witham, Jr., production manager of The Parker-Young Company, Lincoln, N. H. has recently sold to the Noble and Wood Machine Company and its affiliates of Hoosic Falls, N. Y. the following process patents, being manufactured by them.

Continuous Extractor, U. S. Patent No. 1,722,693; Continuous Extractor, Canadian Patent No. 298,170.

Master Pulping and Shredding System, U. S. Patent No. 1,887,225; Master Pulping and Shredding System, Canadian Patent applied for.

Mechanical Stethoscope for Beaters, U. S. Patent No. 1,732,114.

Propeller Beaters, U. S. Patent No. 1,692,602; Propeller Beaters, Canadian Patent No. 304,909.

Other apparatus developed by Mr. Witham, Jr., of recent years include the Tycos Witham Jr. Paper Drying Apparatus, viz: Moisture Control and Recorder to Taylor Co. Rochester, N. Y., U. S. Patent No. 1,646,516, No. 1,626,060, No. 1,646,515, No. 1,694,349, No. 1,547,481 including seven foreign applications.

Continuous freeness indicator and density control and recorder for process work beaters, jordans, grinders, etc., etc. Several patents pending, now being commercialized as the Trimbey Witham Jr. regulators, manufactured by the Trimbey Machine Works, Glens Falls, N. Y.

Paper flexibility tester, U. S. Patent No. 1,385,164, Paper flexibility tester, Canadian Patent No. 214,457. Note: In use but license for manufacture not completed.

Warren Witham Jr. Pump Beating System. Patent pending. License Warren Steam Pump Company Inc., Warren, Mass.

Imprint machine for marking and manufacture of fancy paper, Patent No. 1,872,207. License for manufacture not issued as yet.

Rotary pulping and beating machine, Patent No. 1,759,385. Rotary pulping and beating machine, Patent No. 1,831,642. License for manufacture being considered but not decided upon as yet.

To Make Improved Beer Coaster

HOLYOKE, Mass., April 17, 1933—The Newton Paper Company is ready to cash in on the legalization of beer with a new improved beer coaster that is confidently expected to boost the production at the local mill considerably.

The new coaster is made of extremely absorbent paper stock with the exception of the bottom surface, which is moisture proof. Hence beer spilled on the top of the "Newco Mattpad," as it is called, cannot seep through to stain tablecloths on which it is placed. It is planned to use the top surface for printing advertisements. Already large paper jobbers have given the Newton Company substantial orders for the product.

Before prohibition the beer coasters used were largely imported from Germany. They were absorbent on both surfaces. The Wisly Printing Co. is printing the top surfaces of the pads for the Newton Co.

Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 19, 1933—The Aetna Paper Company has been awarded the contract for furnishing the Government Printing Office with 6,250 pounds (50,000 sheets) of 20 x 25, 50 per cent rag antique cover paper at 5.84 cents per pound, bids for which were received on March 31.

The Lindemeyr Company will furnish 200 sheets of 24 x 36 blue cloth lined paper at $9.17 per 100 sheets, bids for which were received on March 24.

New York Market Review

Office of the PAPER TRADE JOURNAL.
Wednesday, April 19, 1933.

Conditions in the local paper market were fairly satisfactory during the past week. While demand for the various standard grades of paper was only moderately active, sales forces of the leading paper organizations continue optimistic. Inquiries for future needs are fairly numerous, some of which should materialize into good orders.

The special feature of the news print paper market was the announcement by the International Paper Company of a temporary reduction of $5 a ton. This makes the New York price, $40 per ton, delivered. The action of the International Paper Company was said to be due to price reductions two months ago by several other manufacturers.

Trading in the paper board market is fairly active. Box board production is well maintained. Prices are steady. The fine paper market is marking time. Tissues are going forward in seasonal volume. Sentiment in the coarse paper market is improving. Demand for kraft wrapping paper is slightly better. Prices are steady to firm.

Mechanical Pulp

The ground wood pulp market is rather quiet at present. Production, both in this country and abroad, however, is being maintained in sufficient volume to take care of current requirements. Accumulations are not excessive and the statistical position of the industry continues sound. Prices are holding to previously quoted levels.

Chemical Pulp

No radical changes were reported in the chemical pulp market during the past week. Demand for the various domestic and imported grades is mostly along routine lines. Shipments against contract are moving with regularity. No. 1 strong unbleached imported sulphite is still offered at from $1.40 to $1.60, on dock, Atlantic ports.

Old Rope and Bagging

Steadiness prevails in the old rope market. Demand for both domestic and foreign old manila rope is fairly persistent. Small mixed rope is moving freely. Old rope prices remain unchanged. The bagging market continues firm. Scrap, gunny and roofing bagging are arousing more interest. Prices are holding to schedule.

Rags

Some improvement was noticed in the domestic rag market. New cotton cuttings are beginning to move in better volume. There is a brisk demand from abroad for No. 1 shirt cuttings. Roofing grades are firmer. The imported rag market is listless and is still affected by the foreign exchange situation. Prices are nominal.

Waste Paper

Board mill demand for the lower grades of paper stock has quieted down somewhat. Offerings are limited, however, and recently advanced prices are generally maintained. The better grades of waste paper are holding up well. Book stock continues firm. Hard and soft white shavings and old kraft papers are in satisfactory request.

Twine

Demand for the various grades of twine has fallen off slightly following the Easter holidays. However, the outlook for the future is considered fairly promising, in some quarters. The movement of supplies into consumption continues fairly heavy. Prices are generally well maintained, despite the usual keen competition.

Canada's Paper Exports Lower

MONTREAL, Que., April 17, 1933.—Canada's exports of news print for the month of February had a value of $4,261,033, as compared with $6,894,515 in February 1932. For the 12 months ending February they amounted to $76,876,076, a decline of $29,194,434, as compared with the previous 12 months. Exports of bleacher sulphite pulp for February were valued at $926,899, as compared with $1,003,927 in February, 1932; Kraft pulp $234,337 as compared with $257,632; unbleached sulphite $178,720 as compared with $335,267; and mechanical wood pulp, $65,619 as compared with $2,490,398. Total exports of paper and manufactures of paper for February amounted to $4,471,514 as compared with $7,191,649 in February, 1932; and for the 12 months ending February $80,068,825, as compared with $109,868,282 for the previous 12 months. Total wood pulp and screening amounted to $1,411,226 in February as compared with $1,746,717 in February, 1932, and for the 12 months ending February $18,221,968 as compared with $28,703,548 for the previous 12 months. Following are comparisons for the 12 months ending February:

	1933	1932
Paper	$80,068,825	$109,868,282
Wood pulp	18,221,968	28,703,548
Pulpwood	4,402,033	8,600,729
Total	$102,692,826	$147,172,559

To Be Coordinator for New York and New Jersey

[FROM OUR REGULAR CORRESPONDENT]

SYRACUSE, N. Y., April 17, 1933—Announcement is made of the appointment of Prof. Nelson C. Brown, of the state forestry department at Syracuse University, to the post as coordinator for New York and New Jersey in connection with the national forestry unemployment program launched by the federal government. The appointment followed the return of Dean Brown from Washington where a conference of forestry officials from the various states was held.

Prof. Brown is recognized as a national authority on forestry matters and in his new duties he will represent the federal forest service in coordinating the work of this group as activities develop between the federal department of war, labor and agriculture in the area which includes the states of New York and New Jersey.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, April 19, 1933.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Although demand continues quiet, the bleaching powder market is fairly steady. The contract movement is seasonal. Prices generally remain unchanged. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market is firm. Domestic standard ground is quoted at 7½ to 8 cents and finely ground at 8½ to 9 cents per pound. Argentine standard ground is selling at 9 cents and finely ground at 9½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Some improvement was noticed in the caustic soda market. The contract movement is normal. Solid caustic soda is quoted at from $2.55 to $2.60; while the flake and ground are selling at from $2.95 to $3.00 per 100 pounds, in large drums, at works.

CHINA CLAY.—Demand for china clay is fairly persistent. Prices are holding to formerly quoted levels. Imported china clay is quoted at from $10 to $15 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—The chlorine market is moderately active. Supplies are moving into consumption at a fairly satisfactory pace. Prices remain unaltered. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is marking time. The grades of gum rosin used in the paper mills are quoted at from $3.70 to $3.90 per 280 pounds, in barrels, at works; while wood rosin is selling at $2.75 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Paper mill demand for salt cake is brisk. Prices remain unchanged. Salt cake is quoted at from $12.50 to $13.00; chrome salt cake at from $11.50 to $12.50 per ton, at works. Imported salt cake is selling at from $12.50 to $13.00 per ton, on dock.

SODA ASH.—Conditions in the soda ash market are improving slightly. The contract movement is fairly heavy. Prices remain unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.30; and in barrels, $1.43.

STARCH.—Steadiness prevails in the starch market. The higher prices recently reported are generally well maintained. Special paper making starch is quoted at $2.34 per 100 pounds, in bags; and at $2.61 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Contract shipments of sulphate of alumina are moving to the paper mills in good volume. Commercial grades are still quoted at from $1.25 to $1.46; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Trading in the talc market is rather listless at present. Prices, however, are holding to schedule. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at eastern mines; while imported talc is selling at from $18 to $22 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@38.00
Bonds	4.75	@53.25
Index	6.00	@12.00
Writings—		
Extra Superfine	6.50	@15.00
Superfine	6.25	@14.75
Tub sized	4.50	@ 7.00
Engine sized	4.00	@ 5.00
Book, Cased—		
S. & S. C.	4.25	@ 5.00
M. F.	3.75	@ 4.25
Coated and Enamel	5.00	@ 9.00
Lithograph	5.00	@ 9.00
Tissues—Per Ream—		
White No. 1	.50	@ .70
White No. 2	.45	@ .60
Anti-Tarnish M. G. only	.65	@ .70
Colored	.70	@ .90
Kraft	.65	@ .70
Manila	.55	@ .60
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.00	@ 5.25
No. 2 Wood	3.50	@ 4.00
Butchers	3.37½	@ —
Fibre Papers—		
No. 1 Fibre	4.25	@ 5.50
No. 2 Fibre	4.00	@ 4.75
Common Bogus	1.50	@ 3.00
Screenings	2.00	@ 3.00
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs., No. 1	.09¼	@ —
No. 2	.11¼	@ —
Bleached, basis 20 lbs.	.11¼	@ —

(Delivered New York)

News, per ton—		
Roll, contract	40.00	@ —
Rolls, spot	40.00	@ —
Sheets	45.00	@ —
Side Runs	25.00	@ —
Kraft—		
No. 1 Domestic	4.50	@ 4.75
No. 2 Domestic	2.75	@ 3.00
Southern	2.62½	@ 3.00
Imported	2.75	@ 3.50
Boards—per ton—		
News	32.50	@35.00
Straw	29.50	@31.50
Chip	30.00	@32.50
Binders' Boards	62.00	@70.00
Kraft Liner	40.00	@45.00
Standard 85 Test Jute Liner	27.75	@30.00
Sgl. Mla. Lt. Chip	37.50	@40.00

(F. o. b. Mill)

Wood Pulp Boards	70.00	@80.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	18.50	@20.00
Dry	19.00	@21.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	14.00	@22.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	1.80	@ 2.25
Easy Bleaching	1.60	@ 1.75
No. 1 strong unbleached	1.40	@ 1.60
Mitscherlich unbleached	1.60	@ 1.75
No. 2 strong unbleached	1.25	@ 1.35
No. 1 Kraft	1.25	@ 1.40
No. 2 Kraft	1.10	@ 1.15
Sulphate—		
Bleached	1.85	@ 2.15

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—		
Bleached	1.75	@ 3.75
Easy Bleaching	1.60	@ 1.75
News	1.40	@ 1.65
Mitscherlich unbleached	2.00	@ 2.25
Kraft (Domestic)	1.25	@ 2.75

(Delivered Paper Mills)

Soda Bleached	2.00	@ —

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	3.80	@ 4.00
New White, No. 2	3.00	@ 3.25
Silesias No. 1	3.25	@ 4.00
New Unbleached	5.25	@ 5.75
New Soft Blacks	2.75	@ 3.00
Blue Overall	3.00	@ 3.50
Fancy	1.25	@ 1.50
Washables	1.00	@ 1.25
Mixed Khaki Cuttings	2.50	@ 3.00
Pink Corset Cuttings	2.75	@ 3.25
O. D. Khaki Cuttings	3.00	@ 3.25
Men's Corduroy	1.00	@ 1.25
New Mixed Blacks	2.25	@ 2.50

Old Rags

White, No. 1—		
Repacked	3.00	@ 3.50
Miscellaneous	2.00	@ 2.25
White, No. 2—		
Repacked	1.75	@ 2.00
Miscellaneous	1.50	@ 1.75
Thirds and Blues—		
Repacked	1.50	@ 1.75
Miscellaneous	1.00	@ 1.25
Black Stockings	2.00	@ 2.25
Roofing Rags—		
No. 1	.53	@ .58
No. 2	.48	@ .53
No. 3	.43	@ .48
No. 4	.38	@ .43
No. 5A	.33	@ .38

Foreign Rags

New Rags

New Dark Cuttings	1.30	@ 1.40
New Mixed Cuttings	1.50	@ 1.60
New Light Silesias	3.00	@ 3.25
Light Flannelettes	2.50	@ 2.75
Unbleached Cuttings	4.50	@ 5.00
New White Cuttings	4.00	@ 4.25
New Light Oxfords	3.00	@ 3.25
New Light Prints	1.85	@ 2.25

Old Rags

No. 1 White Linens	5.25	@ 5.50
No. 2 White Linens	4.50	@ 4.75
No. 3 White Linens	3.25	@ 3.75
No. 4 White Linens	1.75	@ 2.25
No. 1 White Cotton	3.50	@ 3.75
No. 2 White Cotton	2.75	@ 3.25
No. 3 White Cotton	2.25	@ 2.50
No. 4 White Cotton	1.40	@ 1.50
Extra Light Prints	1.80	@ 2.00
Ord. Light Prints	1.60	@ 1.75
Med. Light Prints	1.40	@ 1.55
Dutch Blue Cottons	1.35	@ 1.40
French Blue Linens	1.80	@ 1.90
German Blue Linens	1.70	@ 1.80
German Blue Cottons	1.20	@ 1.25
Checks and Blues	1.25	@ 1.30
Lindsay Garments	.75	@ .80
Dark Cottons	.50	@ .55
Old Shopperies	.55	@ .60
New Shopperies	.60	@ .65
French Blues	1.25	@ 1.30

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	.90	@ 1.00
Domestic	1.00	@ 1.10
Wool Tares, light	.70	@ .80
Wool Tares, heavy	.70	@ .80
Bright Bagging	.70	@ .75
Small Mixed Rope	.50	@ .60
Manila Rope—		
Foreign	1.35	@ 1.40
Domestic	1.40	@ 1.50
New Burlap Cut	1.00	@ 1.50
Hessian Jute Threads—		
Foreign	2.60	@ 2.75
Domestic	2.80	@ 3.00

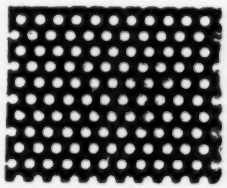
Old Waste Papers

(F. o. b. New York)

Shavings—		
White Envelope Cuttings	2.00	@ 2.10
Ordinary Hard White No. 1	1.70	@ 1.80
Hard White No. 2	1.50	@ 1.60
Soft White No. 1	1.45	@ 1.55
Flat Stock—		
Stitchless	.65	@ .70
Overissue Mag	.65	@ .70
Solid Flat Book	.55	@ .65
Crumpled No. 1	.45	@ .50
Solid Book Ledger	1.50	@ 1.75
Ledger Stock	.45	@ .55
New B. B. Chips	.20	@ .25
Manilas—		
New Env. Cut	1.35	@ 1.45
New Cuttings	1.00	@ 1.05
Extra No. 1 old	.80	@ .90
Print	.35	@ .40
Bogus Wrapper	.30	@ .35
Container	.25	@ .30
Old Kraft Machine—		
Compressed bales	.65	@ .75
News—		
No. 1 White News	1.00	@ 1.05
Strictly Overissue	.50	@ .55
Strictly Folded	.43	@ .48
No. 1 Mixed Paper	.25	@ .30

Perforated Metal Screens

For Pulp and Paper Mills



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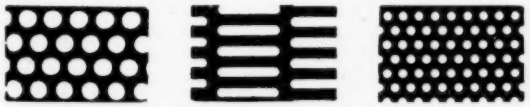

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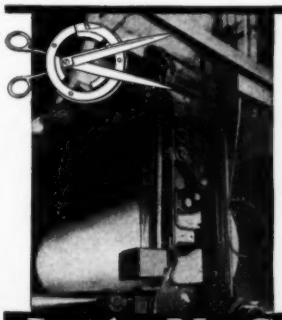

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LANGSTON SLITTERS

Twines
(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¾	@	.12¾
Tube Rope—			
4-ply and larger	.08¼	@	.10¾
Fine Tube Rope—			
4-ply	.12½	@	.12¾
3-ply	.13¾	@	.13¾
2-ply	.14¾	@	.14¾
Paper Makers Twine			
Balls	.09½	@	.11¼
Box Twine, 2-3 ply	.11¾	@	.12¾
Jute Rope	.09	@	.10
White Hemp	.12¾	@	.15¾
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.23	@	.28

CHICAGO

Paper
(F. o. b. Mill)

Bag Bond	.30	@	.53¾
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¾
No. 2 M. F. Book	.05¾	@	.06½
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¾	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¾	@	.03¾
No. 1 Kraft	3.50	@	4.50
Southern Kraft	2.62½	@	—
No. 2 Kraft	2.62½	@	—
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03½
Manila Tissue	.07	@	.07¼
White Tissue	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	45.00	@	—
Sheets	50.00	@	—
Boards, per ton—			
Plain Chip	27.50	@	—
Solid News	30.00	@	—
Manila Lined Chip	37.50	@	—
Patent coated	47.50	@	—
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.50	@	1.55
No. 1 Hard White	1.40	@	1.45
No. 1 Soft White	1.00	@	1.10
Ledger & Writings	.55	@	.60
Solid Books	.45	@	.50
Blanks	1.00	@	1.05
Krafts	.70	@	.80
New Kraft Cuts	1.15	@	1.25
Manila Env. Cuts	1.25	@	1.30
Ex. No 1 Manila	.90	@	1.00
Print Manila	.30	@	.40
Overissue News	.45	@	.50
Old Newspapers—			
No. 1	.45	@	.50
Mixed Papers—			
No. 1	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07¼
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.02¼
Common Bogus	.03	@	.04
(Delivered Philadelphia)			
News Print Rolls	46.00	@	—
Straw Board	32.00	@	—
News Board	30.00	@	—
Chip Board	30.00	@	—
Wood Pulp Board	70.00	@	80.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	62.00	@	65.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.03½	@	.04
New White, No. 2.	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft.	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01	@	.01½
Blue Overall	.03	@	.03½
Cottons—According to grades—			
Washable, No. 2	.01	@	.02
New Blue	.01	@	.02
Fancy	.01½	@	—
New Black Soft	.02	@	.03
New Light Seconds	.01	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.03½
No. 2 Mixed	.02½	@	.03
Corduroy	.02	@	.02½
New Canvas	.03½	@	.04
New Black Mixed.	.02½	@	.03

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	1.75	@	2.00
M. G.	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.80

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	—
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	1.60	@	1.70
No. 2 Hard White	1.50	@	1.60
No. 1 Soft White	1.40	@	1.45
No. 2 Soft White	1.10	@	1.15
No. 1 Mixed	.50	@	.60
No. 2 Mixed	.40	@	.50
Solid Ledger Stock	1.20	@	1.25
Writing Paper	.65	@	.70
No. 1 Books, heavy	.55	@	.60
No. 2 Books, light	.40	@	.45
No. 1 New Manila	1.10	@	1.15
No. 1 Old Manila	.60	@	.65
Print Manila	.40	@	.45
Container Manila	.40	@	.45
Old Kraft	.80	@	.85
Common Paper	.22½	@	.25
No. 1 Mixed Paper	.20	@	.30
Straw Board, Chip	.20	@	.30
Binders Board Chip	.20	@	.30
Corrugated Board	.35	@	.40
Overissue News	.50	@	.60
Old Newspaper	.40	@	.45

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05¾	@	.11½
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¾
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	—	@	.04¾
No. 2 Kraft	.02¾	@	—
(F. o. b. Boston)			
Southern Kraft	.02¾	@	—
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
(Delivered New England points)			
News Print, rolls	44.50	@	—
Straw Board, rolls	.009	—	@35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	32.50	@	—
Chip Board	27.50	@	—
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	—	@	37.50
Single White, Patent Coated News Board—			
Bender	45.00	@	55.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Soft White	1.25	@	1.40
No. 1 Old Manila	.50	@	.60
No. 1 Mixed	.60	@	.70
No. 2 Mixed	.40	@	.50
Solid Ledger Books	1.20	@	1.40
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.60	@	.70
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	—	@	.30
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.50	@	.60
White Blank News	.85	@	.90
No. 1 Kraft	.85	@	.95
Manila	.80	@	.90
No. 1 Mixed Papers	.17½	@	.22½
Print Manila	.30	@	.40
Overissue News	.35	@	.45
Old Newspapers	.32½	@	.37½
Box Board, Chip	.17½	@	.20
Corrugated Boxes	.25	@	.30
Screening Wrappers	.25	@	.32½

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.00	@	—
Domestic	—	@	.60
Manila Rope—			
Foreign	—	@	1.40
Domestic	—	@	1.60
Transmission Rope	—	@	.90
Mixed Strings	.25	@	.30
Jute Rope	—	@	.75
Jute Carpet Threads	.25	@	.30
Bleachery Burlap	1.75	@	2.00
Scrap Burlap	.50	@	.62½
No. 1 Scrap Burlap	.65	@	.75
Scrap Sisal	.80	@	—
Scrap Sisal for shredding	—	@	.90
Wool Tares, heavy	.65	@	.75
New Burlap Cutting	.75	@	.90
Australian Wool Pouches	1.75	@	2.00
Heavy Baling Bagging	.90	@	1.10
Paper Mill Bagging	.30	@	.35
Bagging No. 2	.20	@	.25
No. 1 Burlap	1.75	@	2.00

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	—	@	.01½
New White No. 1	—	@	.03½
New White No. 2	.02¾	@	.03¼
Silesias No. 1	—	@	.03
New Black Silesias	.02½	@	.02¾
New Unbleached	—	@	.04½
Fancy	—	@	.02½
Washable	—	@	.01½
Cottons—According to grades—			
Blue Overalls	—	@	.03¾
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03½
O. D. Khaki	.03½	@	.03¾
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	.04	@	.04¼

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	1.50	@	1.75
White No. 2—			
Repacked	.02¼	@	.02½
Miscellaneous	.02	@	.02¼
Twos and Blues	.90	@	1.00
Thirds and Blues—			
Repacked	.75	@	.85
Miscellaneous	.70	@	.75
Black Stockings	2.00	@	2.25
Roofing Stock—			
No. 1	.40	@	.45
No. 2	.35	@	.40
No. 3	.25	@	.30

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.50	@	.60
New No. 1 White Shirt Cuttings	3.75	@	4.00
Dutch Blues	1.25	@	1.50
New Checks & Blues	2.25	@	2.50
Old Fustians	—	@	.75
Old Linsey Garments	.55	@	.65

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.09¾	@	—
No. 2 Sulphite	.07½	@	—
No. 1 Colored	.09¼	@	—
No. 2 Colored	.08½	@	.10½
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	10.00	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.00	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	48.00	@	58.00
Sulphate	50.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	1.80	@	—
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White Blk. News	1.25	@	—
Book and Ledger—			
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Ledgers and Writings	1.00	@	—
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Fancy Shirt Cuttings	.02¼	@	.02½
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